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LECTURES
ON
MEDICAL JURISPRUDENCE,
NOW IN COURSE OF DELIVERY AT THE
UNIVERSITY OF LONDON,
BY
PROFESSOR A. T. THOMSON.

LECTURE I.

Objects and Importance of Forensic Medicine.—Arrangement of the Course.

GENTLEMEN:—The subject of the course of lectures which we are now about to commence, is one of great importance to the community and to the professors of the healing art. It is one more nearly allied to the *practice* of the profession than any other part of your studies; it requires a knowledge of the whole range of medical education before it can be properly understood; and as it involves circumstances which call for such an extent of knowledge, the study of it is deferred until the last year of your attendance on medical lectures. It involves, besides, a certain extent of acquaintance with law, without which many circumstances may occur, in the course of judicial enquiries, in which you may be called to give information which, from inadvertencies, might prove injurious to your professional character, and lead to animadversions which would be highly unpleasant to your feelings. In a few words, the knowledge of *Forensic Medicine* requires both an intimate acquaintance with the principles of medicine, and also such a knowledge of law as will make you familiar with the nature of those judicial inquiries, with reference to which information may, in the course of professional practice, be required from you.

In court, whatever may be the crime of the person arraigned at the bar of justice, you should be fully prepared to answer every question put to you, in such a manner as not only to elicit truth and forward the objects of justice, but in such a manner as will uphold the respectability of the medical profession, and advance your own reputation as a member of it. The object of this course of lectures is to point out to you the manner in which this is to be accomplished.

It is not requisite, in this place, to enquire whether "human laws, considered as a rule of conduct," labour under defects. Whatever may be their deficiencies, when they are once promulgated, men, *willingly* or *unwillingly*, must submit to their control. "The law," says Dr. Paley, "never speaks but to command, nor commands but where it can compel." Laws, if just, are made *general*, without foreseeing or regarding whom they may affect; consequently, they require to be administered with impartiality, which can only occur when the testimony in evidence of any imputed crime is so clear that its truth cannot be impeached. But, even with the valuable requisite of an oath, the grossest injustice might follow legal investigations, were the proceedings of courts not carried on in public. The auditory, on these occasions, happily consists of a promiscuous concourse of people, of all ranks and descriptions, as well those ignorant of legal knowledge as those who are capable, by their acquirements, of censuring the proceedings of the court, if they swerve, in the smallest degree, from the direct line of exact and even-handed justice. Such, in particular, is the great charter of public safety in this happy country.

I mention this, Gentlemen, to show you that your evidence, in such cases, becomes an object of general criticism: it is delivered in public, and will be scrutinized with severity; and little favour will be shown in animadverting upon its defects. Nor is this to be regarded as either unjust or ungenerous, if we reflect upon the nature of judicial investigations, and the constitution of courts of justice.

In the constitution of courts of justice, independently of precedents, set up and confirmed by repeated adjudications, checks of great importance on the open latitude of judging, which cannot be safely entrusted to any description of men, the great object for ensuring *exact decisions* is, undoubtedly, "the apparent and particular equity of the case before them." Now, this is only to be accomplished by the evidence of the *guilt* or

the *innocence* of the accused party, elicited from the testimony of the witnesses examined on both sides of the question; and if this testimony, however honest and disinterested the witnesses, be not founded upon accurate acquaintance with the nature of the facts to be proved, it cannot be considered *evidence*. The veracity of the witnesses, independently of an oath, may be unimpeachable; and, yet, from the influence of *prejudice*, from *ignorance*, or from *negligence*, the testimony which he offers may be *utterly valueless*; or, if it be admitted, from ignorance on the part of the court, an innocent person may be condemned, and suffer the penalty of the law. To render this remark more intelligible, as refers to evidence in cases involving medical testimony, I may only mention, that the testimony of a physician is recorded as having been received, which deposed, that "arsenic (*arsenious acid*) will not dissolve in warm water, but that in tea, containing milk and sugar, it would be suspended so long, that it would kill a person who had drunk it." Now, this testimony, having been admitted, displays *equally* the ignorance of the physician and that of the court; and if clearer evidence of the criminality of the impeached party had not been obtained, the conviction, upon such testimony, would have been an act of flagrant injustice.

In another case, in which the evidence was far from being so clear as to authorise the conviction, we find the principal medical witness, whose evidence was depended upon solely owing to the ignorance of the court, employing such expressions as the following, in a pamphlet, which he afterwards published:—"Should the white *metallic* particles (namely, those of arsenious acid) not be discoverable in the stomach," &c.,—"the corrosiveness of the *metallic* particles." He recommends—"a supersaturated saline draught, *in actu effervescentis*, allowing the alkali to predominate, four grains to each dose, with the intention of neutralizing any probable remains of the white oxyde, by forming an *arsenite of potash*, and relieving the disposition to vomit." Need I say, Gentlemen, that the evidence of such a man was valueless? All of you know that arsenious acid is *not* a metal, that the metals are *not corrosive*; and I need scarcely inform you, that the *arsenite of potassa* is more poisonous than the arsenious acid, owing to its more easy admission into the system. Such opinions, made public, did not escape criticism; the professional character of the unfortunate witness deservedly sank.

The public have a right to expect more from professional men, whom they generally suppose to be well educated, than from ordinary witnesses. The confidence which is reposed in them is one part of a mutual contract, which medical men, as it were, enter into with the public; the principle is the same that governs all contracts, and is capable of easy application. If confidence be bestowed, that which claims it must exist. "Whatever is expected on one side, and known to be so expected by the other, is to be deemed a part or condition of the contract." The medical man, therefore, whose testimony displays ignorance, fails in his part of the contract; and if many thus fail, it is superfluous to say that the profession must suffer. It may be said that this remark applies equally to the examiners as the examined; that if a barrister be ignorant of the subject upon which he is endeavouring to elicit truth, it is not probable that his questions will obtain answers which are likely to forward his object, even from the best informed medical witness; and the remark is correct. But you should be aware, that in all cases involving medical information, the barrister is not only previously tutored by some medical friend, or, in the language of the bar, is *crammed*, but he, moreover, generally endeavours to have a medical adviser at his elbow; so that, in fact, the medical evidence is drawn forth not by the counsel, but by a professional man, who will permit no mistakes of the witness to pass unnoticed. It is upon these grounds, upon the necessity of knowledge both on the part of the court and of the witnesses, in conducting legal investigations, involving medical information, that the branch of instruction upon which we are now about to enter, namely, *Medical Jurisprudence*, is founded.

In every legal inquiry, certain rules of evidence are necessary to be observed. These will be explained to you in due course; at present I shall confine myself to a few general remarks. I have already mentioned the necessity of a medical witness possessing that degree of knowledge for which the public gives him credit; but it is not enough that he have a general acquaintance with his profession; he ought to be able to apply the information which he possesses, to the investigation of certain objects, with a degree of precision and accuracy which the ordinary duties of his practice do not demand; and it cannot be denied, that owing to neglect in this part of his education, the medical practitioner too often has not only made a sorry figure in courts of justice, as far as regards his own acquirements, but has tended to lower greatly the general character of the profession in the estimation of the public. Although ordinary witnesses are required to speak to *facts* only, yet, in matters demanding medical testimony, *opinions* delivered upon oath are received as evidence; and surely it is unnecessary to contend that these opinions should not be founded upon a *partial* or an *imperfect* view of the subject.

An opinion may be the offspring of sincere belief on the part of the witness; but unless

this belief arise from the capacity and power of judging correctly, and proceed from a sound and indubitable knowledge of the subject, as much injury may arise to the interests of the party involved in the inquiry, and, consequently, to the cause of justice, as if the opinion delivered were of a description which would admit of being challenged. What must that man's feelings be who can, unconcernedly, enter the witness' box to submit to examination, and cross-examination, on a subject of which he is conscious of possessing little or no knowledge; and, in the face of a crowded court, to be tortured by the perplexing questions of an acute and penetrating barrister, who is likely to discover his deficiencies, and not only to convert his ignorance to the advantage of the culprit, but to expose and hold him up personally to the ridicule and contempt of the public? No professional man ought ever to risk exposing himself to the chance of such an exhibition. But more serious consequences may arise from the unfitness of a medical practitioner to discharge properly the duty of a witness in a trial involving medical evidence: his testimony, although founded in ignorance, yet may influence the issue, and may either let loose a depraved or felonious character upon society, or, what is worse, may place in jeopardy the life and reputation of an innocent and respectable individual. Even if the witness escape the scorn of public censure, what must be the poignancy of mortification in the silent condemnation of his own conscience, should he ever afterwards become sensible of his ignorance?

In delivering your evidence, you are legally protected from answering any questions that would tend either to *sully* your honour, or to *criminate* yourselves. Upon both of these points I shall have ample opportunity of affording you all the information necessary for your guidance, as we proceed.

You will perceive by the syllabus which has been put into your hands, that the doctrine of evidence will be fully discussed, and the practice of the different courts, before which you may be summoned to appear, pointed out. But, Gentlemen, the remarks that I shall lay before you respecting the law of evidence, however important in themselves, can only be regarded as preparatory to the proper business of the course, which you will perceive I have divided into two heads,—the first involving questions demanding medical testimony in legal inquiries connected with our social relationships, and the constitution of society; the second, questions demanding medical testimony in legal enquiries connected with personal safety and life. In treating a subject of such extensive range, I shall endeavour to simplify the details as much as possible; to elaborate such parts only as demand minute investigation; where any diversity of opinion exists on particular points, to remove the lumber of hypothesis; and, in freeing every question from adventitious matter, to place it before you in the clearest and the most unobstructed point of view.

To afford to you some idea of the nature of the subject, and to demonstrate to you the great responsibility of the medical practitioner, whenever he is called upon to apply his professional knowledge in aid of the laws, I will select one or two specimens from each of the heads of arrangement to which I have referred. I take this method of proceeding, not only to open to you, Gentlemen, the method of treating the subjects of our inquiries, but to convince you how much attention will be required on your parts to insure to you an ample harvest of useful instruction and practical information.

The first head of our enquiries includes many considerations relating to *insanity*. Under the visitation of this awful calamity, individuals commit many acts which render it necessary that they should be placed under restraint, separated from friends and society, and have their property vested in trust. But before these coercive measures can be permitted, before an individual can be deprived of his liberty and confined in a lunatic asylum, before an unfortunate being arraigned at the tribunal of justice to answer for an act of violence committed in a state of insanity, can be convicted, to prevent crime from sheltering itself under the plea of insanity, to guard the property, and to protect, in every respect, the interests, both of the insane and of society, the law has justly decided, that *clear* and *unequivocal* insanity must be established by medical evidence.

Did madness always appear in that state "of sweeping tyranny," to borrow the forcible language of a distinguished writer on this disease, "which scorns the demarcation that limits the sober mind," there would be little difficulty in deciding, at once, on the condition of the person's intellect. But when we consider the various shades which this disease, of Protean character, assumes, the imperceptible step with which it often steals on, and the unforeseen manner of its first obvious development, the important and responsible duty which the medical practitioner has to perform in ascertaining its existence, and, by his deposition, authorizing the measures necessary to be adopted in such a case, becomes at once evident. The character, the personal liberty, the life even of a human being hangs upon his opinion. The man who can undertake such a decision upon a slight acquaintance with the subject, who can presume to give an opinion which requires to be founded on science, close observation, experience,

and truth, without possessing these qualifications, must have feelings, and entertain notions of rectitude, which, I trust, none of you, Gentlemen, will ever entertain or cherish.

In every case where your evidence is required in legal investigations, you must bear in mind that you will be exposed to be thrown off your guard by the subtleties of cross-examination, that the opinion you are to advance must be positive, and, therefore, will not be admitted as evidence unless the proofs are unequivocal. By the practitioner who has a competent knowledge of his profession, and has directed his attention to such minute points as are likely to be brought forward, and sifted with that severity of investigation which is properly demanded in courts of justice, the lash of the practiced lawyer, whose duty to his client obliges him, too frequently, to endeavour to perplex and humble the irritable feelings of the medical witness, may be justly disregarded. Armed with knowledge, and confirmed in the opinions founded upon it by professional experience, the practitioner may approach the tribunal of justice, clothed in all its severity, with the full conviction of the power and strength of his acquisitions; and what is of greater importance, with undoubted advantage to the cause of truth. But to the young, and the inexperienced, such a situation is one of danger and severe trial. On the appearance which he makes, his future prospects in life may depend; he may at once be consigned to degradation and oblivion, or be elevated to an enviable station in the opinions of his fellow-men. A practitioner may be well acquainted with the general symptoms of insanity, for instance, but may not have had his attention directed to the variety of collateral circumstances which are necessary to be closely investigated, in order to impress and satisfy a judge and a jury, before a decision on the case at issue can be safely pronounced. His knowledge should be extensive, and be at his command, that, like a torch, it may throw such a light upon his path, in the obscurity of the labyrinths in which the question may be involved, as shall enable him at once to lead the court to a correct decision; not overshadowed by the clouds and mists of hypothesis, but standing forth in the imposing and bold relief of unveiled truth. In order to illustrate this point, let us descend a little into details.

A person is stated to be insane, and a commission of lunacy is issued to ascertain the fact. The points to be proved are the actual condition of the mind of the person, whether the symptoms are of such a nature as to require his confinement, or to permit him with propriety to retain his liberty and enjoy his property; and whether the degree of disease is such as affords a probable chance of recovery, or, in case of convalescence, whether the cure is likely to be permanent. Now, in such an enquiry, two descriptions of well-educated men are engaged, the lawyer and the medical practitioner. The lawyer is little solicitous respecting the physiological distinctions of deranged intellect, or the causes producing it. He is merely anxious to determine how far the existing state of mind of his client disqualifies him from conducting himself as a responsible agent, or rightly managing his affairs. The medical man is called upon to afford the proofs, to demonstrate satisfactorily the condition of intellect which can authorize a decision of incapacity. In the lawyer, that kind of knowledge is required which will direct him to put such questions as shall draw out the information of the medical witness; and, also, to conduct the examination of the lunatic himself in such a manner as shall disclose clearly to the jury the subjects of his delusion, and satisfy them respecting the actual condition of his mind. I must make you aware that these remarks do not refer to that indefinable term, "unsound mind," which cannot correctly be meant to imply, in the legal sense of the present day, either lunacy, idiotcy, imbecility, or incompetency to manage affairs, but to that actually morbid condition of the intellect which renders a man equally incapable of managing his affairs and of regulating his conduct, —in one word, real *insanity*. Can such an investigation be conducted by a barrister wholly ignorant of the nature of insanity, beyond the legal authorities which he consults? Is such an advocate competent to address a jury made up of individuals who have derived their ideas of insanity from the vague foundation of popular opinion respecting this disease? The reply may be anticipated,—Certainly not. Hence the importance of the study of medical jurisprudence to the lawyer, as far as the conducting investigations respecting insanity forms a part of his professional duties. But the duty of the medical practitioner demands a still closer acquaintance with everything that can bear upon the question, not only as to the existing state of mind—for a person of insane mind may have as yet displayed ro striking proof of incompetency to conduct himself, or to manage his affairs—but as regards that state of it which enables the physician to predict that the future conduct of the individual will be so influenced by his state of mind, as to authorize him to declare that he is unfit to be trusted either with his own conduct, or with the management of his affairs. Fatal, lamentably fatal, have been the consequences of leaving individuals at full liberty, until some very obvious and striking act has undeniably demonstrated the existence of insanity. Some of the brightest ornaments of science, of the proudest boasts of our country—some of the best and most enlightened of our species—have been

snatched from their families, their friends, and the service of the state, by such mistaken views of this disease, by such inattentiveness in medical men. Nor is the practitioner less culpable who, from want of knowledge, sets loose the lunatic to follow the dictates of his perilous inclinations; to dissipate his property, and reduce his family to beggary; to wander, to destroy himself, or to commit some criminal act which would arraign him in a court of justice. But such a prediction must not be formed upon slight grounds. The law demands that proof of insanity be undeniably established. The practitioner who is to decide this point may be well versed in the structure, functions, and morbid alterations of the body, as far as these can be made evident by an attentive study, and intimate acquaintance with anatomy, physiology, and pathology; but something more is required,—and it is to medical jurisprudence, in the proper acceptation of the term, that he is to look for that kind of information which, in such cases, will enable him to form a correct opinion. It is the duty of a lecturer on this branch of medical education, to teach the pupil how to regard the phenomena of mind,—"to compare the performance of its offices in a sound and morbid state, and to measure, by the accredited standard of common sense and intelligible reasoning, the degree of imbecility, inability, or incapacity, which disqualifies an individual to conduct himself and manage his affairs." Such are the sentiments of a physician well versed in these enquiries, and of their justness there can exist no diversity of opinion.

In the performance of my task, it shall be my endeavour to direct your attention to the general phenomena of disordered intellect, to lay before you those leading points which are most likely to constitute the subjects of your deposition, or which may be presented for your solution, in the course of legal examination; and to convince you how much the value of medical opinion is enhanced by, and derives authority from, the exposure of its foundations.

To afford some idea of the nature of the subjects that will form the matter to be treated of under the second head of our enquiries, it is only necessary to refer to the importance of toxicology, which has been carried, within our own times, to a very high degree of perfection. In no judicial trials is it so requisite to concentrate the weight of the proof on the medical evidence, as in those which refer to cases of poisoning. In these, general evidence is of considerable value; but it is the medical evidence chiefly that leads to the decision on the innocence or the criminality of the accused. Hence the resources of the medical witness require to be extensive in a corresponding degree. By his acquaintance with the healthy structure of the body, and the changes produced on it and its functions by ordinary diseases, he is enabled to distinguish between the effects of poisons upon it and those of natural disease; by his knowledge of chemistry he is enabled to detect substances of a deleterious nature, either in the cavities or in the fluids of the body, or in the substances that may have been administered to the sufferer; and by physiology he is directed in instituting experiments upon the lower animals, which may lead him to decide in doubtful questions respecting the operation of poisons on man. In this view of the duties to be performed by the medical jurist, it is obvious how wide must be his range over the territories of medical learning before he can be considered capable of hazarding an opinion which ought to be firmly relied upon—one which will authorise a judicial decision upon the punishment due to crime, or the vindication demanded for the protection of innocence. To elucidate this fact, let us suppose a case in which a prisoner is charged with administering a poison which is unknown, but which has proved fatal. The object of the medical witnesses is first to prove that the person has been poisoned, and then to determine, if possible, the particular poison which has been employed.

The first object is to determine whether the supposition, that the death of a person has been the result of the administration of poison, be correct. The evidence is to be drawn from the symptoms during life, from the appearances on the post-mortem examination, from the chemical analysis of the contents of the stomach, and the other cavities of the body of the deceased. The two first of these objects may be readily accomplished by any well educated practitioner whose experience enables him to distinguish the characteristics of ordinary diseases, and, consequently, to pronounce that those which present themselves in this instance are not those of ordinary disease; but, besides this capacity of determining the difference of the symptoms of poisoning from those of ordinary disease, the medical jurist ought to be so familiar with the characteristic symptoms caused by some particular poisons, as to be able to draw his conclusions more accurately than a practitioner less acquainted with these indications of poisoning can be supposed to do. Thus the administration of strychnia induces symptoms closely resembling those which constitute tetanus, and the death of the person might be ascribed to that disease by one unacquainted with the effects of this poison; but, to a well-instructed medical jurist, the manner in which the convulsions make their attack, the rapidity of their progress, the uniformity of their augmentation in violence, to their fatal termination, are sufficient to suggest to his mind their true origin, whilst a perfect conviction of the fact

is acquired by the morbid appearances which he discovers on an inspection of the body. It cannot, however, be denied that there are some natural diseases, the symptoms of which closely resemble those of poisoning; and, in the course of our enquiries, these will constitute materials for discussion.

The morbid appearances, in some instances, are not more to be relied upon than the general symptoms during life; but in others, these appearances are so characteristic as not to be capable of being confounded with the effects of any other agent whatsoever, and it is from the study of toxicology only that the student can acquire a correct knowledge of them. It leads him to be more than usually cautious in conducting his inspections; not to be hurried away in forming his conclusions; to be particularly guarded in drawing inferences from striking appearances which may belong to the effects of a disease, the whole course of which may be latent; and to be fully satisfied of the presumptive evidence of poisoning, which the pathology of the case affords, before he ventures to deliver his opinion.

It is almost unnecessary for me, Gentlemen, to point out to you the assistance derived, in this part of our enquiries, from the graphic art. The delineation of diseased appearances, by whatsoever means produced, far exceeds the efforts of the strongest memory, aided by the greatest powers of observation, to secure to the practitioner an accurate knowledge of the effects of morbid poisons upon structure. Drawing affords him the means of renewing and fixing upon his memory the impressions received from the actual inspection of the parts, and of comparing them with others to which they bear some similitude, but which still differ in particulars important to be kept in view in reasoning upon the case.

The evidence to be derived, in charges of poisoning, from chemical analysis, is undoubtedly the most decisive of all the branches of proof, and it is the perfection to which the processes necessary for this purpose have been brought which constitutes the triumph of toxicology. The search for poisons can now be successfully carried on in the most complex mixtures, and in such states of the poisons as must have for ever defied all the early modes of analysis. On this portion of our task the utmost attention shall be bestowed by me to put you in possession of the best methods of proceeding, and to enable you to appreciate the true value of every new hint, or supposed improvement, by having it put to the test of experiment.

I might now, Gentlemen, recommend to your perusal a long list of books on the subject of this course of lectures, but I am of opinion that a few books, carefully studied, are worth a library full of those that would, if perused, be only superficially known to the student. I would say to you, in the language of the great Dr. Black, the father of all the improvements in modern chemistry, "Take one good book on the subject; read it over; you will scarcely, perhaps, fully comprehend your author; re-peruse it; you will then become master of his views; read it a third time, you will make the matter your own; a fourth time, and you will become critical. And by thus studying one or two of the best writers on the subject, you will gain such a competent knowledge of it, that few difficulties will stand in your way, and you will be able, with little trouble, to glean something useful from every volume that treats of it, which you may afterwards open." As a kind of text-book, I recommend the last edition of *Beck's Elements*, edited by himself. Much valuable information may be obtained from *Fodéré's Traité de Médecine Légale*. On the distinct subjects included in the first division, the books which I would recommend you to consult, shall be mentioned in their proper places. On the chief subject of the second division of our arrangement, as a text-book no work stands higher than that of Dr. Christison *On Poisons*, and no other is essential on toxicology during your attendance on this Course. Those who read French will find much instruction in the article *Empoisonnement*, by Devergie, in the *Dictionnaire de Médecine et Chirurg. Prat.* t. vii.

In conclusion, Gentlemen, let me add, (having, I trust, convinced you of the importance of the branch of study upon which you are about to enter,) that *patience* is an essential virtue in the character of the medical jurist. No trouble should be considered as too great, no time as unprofitably spent, in efforts to elicit truth in medico-legal investigations. You must always recollect that, by your evidence, the most extensive services may be rendered to, or the most lamentable evils heaped upon, individuals and society; "that fraud and violence may be detected and punished, innocence shielded from reproach, the widow and the orphan saved from ruin, virgin purity vindicated, conjugal felicity preserved or restored, the evils of contagion driven from your country, or, to sum up all, the result of your evidence may be life or death,—an unblemished character or eternal infamy."

LECTURES
ON THE
PHYSIOLOGY OF THE NERVOUS SYSTEM,
DELIVERED IN 1836, IN THE COLLEGE OF FRANCE.

By M. MAGENDIE.

Lecture I.

INTRODUCTION.—*On the Importance of a Knowledge of the Physical Sciences to Physiologists.*

GENTLEMEN:—The object for which various courses of lectures are delivered at the College of France, is not so much to lay before the student the actual state of science on any one point, as to give that direction to his studies which is best calculated to favour the progress of the science he has adopted, and to point out the manner in which it has advanced, or may be further improved. Hence, we proceed by the method of *observation*. We interrogate nature through the medium of experiments: we ascertain facts, and we generalize them. This is the sole manner in which science can make any striking progress. The physical sciences are so connected, that the advancement of one brings necessarily with it the means of advancing another, if not its direct and immediate improvement. Every one is convinced that a natural philosopher should be acquainted with astronomy; that the mineralogist ought to be at the same time a chemist, &c.; and if, for the sake of illustration, we were to suppress either of the former sciences, it is easy to see that the progress of the latter must be considerably retarded. The time will come when such or such a phenomenon will not require more than a single science for its explanation, and the genius of man will doubtless contribute its part to the grand development of knowledge. But it is only by observation that we can ever hope to arrive at this limit. The different sciences, then, receive from one another a mutual support, without which their progress would be slow or impossible. But when we pass from the natural sciences to physiology, what an immense distinction at once strikes us! The path we follow is no longer the same, and the method of observation, so fruitful of great results in the former, too often conducts to nothing when applied towards the advancement of the latter. Thus, with respect to the physical sciences, what takes place? Day after day we are called on at the *Institut* to examine memoirs relative to the pretended solution of questions which have little or no connection with the system of the world, &c., as, for example, the "squaring of a circle," the "discovery of perpetual motion." These questions give us little disturbance. We leave the dreamers to dream tranquilly; and these phantoms, formerly so injurious, by the false principles they propagated, do not at the present day retard in the slightest degree the progress of science, when every natural philosopher has his laboratory, which he consults without fear, as the faithful interpreter of nature. But in physiology, this unfortunately is not the case. Here an hypothesis, however false or absurd it may be, is received as a fact. Here experiment is not ever ready to overthrow simple conjecture. While pursuing the study of physiology, instead of finding that the properties, either chemical or physical, of the different tissues and fluids that compose the human body, are determined in a fixed and positive manner; we meet, on the contrary, an obstacle and prejudice which have consecrated quite an opposite principle. We must combat, then, this principle. For my part, I have endeavoured to overthrow it for many, many years. It is founded on the belief "that the phenomena called 'vital' depend altogether on a different source, and are of a different nature, from those which belong to the natural sciences;" and by this axiom, as you must see at once, they deny the influence which the other sciences may exercise towards the advancement of physiology. This prejudice is most absurd. Far from me be the intention of denying that certain phenomena do not take place in the living man unconnected with the phenomena of dead and inert matter. I would never seek in natural philosophy to explain why I extend my arm on volition; but, granting this, we must at the same time uphold that a knowledge of physical phenomena will aid us in the explanation of many vital phenomena, and thus so far advance the science of physiology.

In a former course * I demonstrated, in a satisfactory manner I hope, that a great number of phenomena which were thought exclusively to belong to physiology, were also connected with the physical sciences, and *vice versa*. Thus, for example, with respect to absorption, we proved that all bodies, living and inert, imbibe, and that all the tissues of the animal economy enjoy this property of imbibition; hence we are forced to acknowledge, that in a certain number of cases, this phenomenon, strictly called vital, is of the same nature as one which belongs to natural philosophy. Hence experiment must aid, more or less, the development of the science which has for its object the explanation of life and its acts. The human body, taken as the type of what is most vital, presents, beyond all doubt, the same general properties that we observe in the natural world; for example, extent, so-

* Reported in THE LANCET, Vol. I., 1834-5, commencing at page 49.

lidity, &c. Moreover, in its physical relations, we find the human body endowed with all the different degrees of elasticity, extensibility, &c. Thus, while performing a surgical operation, lay hold of an artery or a vein; draw it out in any direction you will, and you will see how quickly it recovers the form and dimensions which it possesses in the normal state. Elasticity is the agent which acts in this case; it is a physical property which plays an immense part in the production of vital functions. Look at the circulation of the blood; here there is evidently a physical action, unknown to those who reject the doctrine of elasticity, and who affect rather to consider it as an act purely vital. We were formerly taught to believe, that the production and the transmission of sounds had no connection whatever with the science of physiology. At the present day, on the contrary, acoustics belongs to medicine. There are few cases in which we have not occasion to apply them, few maladies where their assistance is not required, for the certitude of diagnosis. However, we must have a certain knowledge of these facts; and physicians unacquainted with the natural sciences are unable to observe them, and, consequently, incapable of deriving that assistance which an acquaintance with natural philosophy gives. Certainly, every physician should be aware of the fact, that the liquids and solids of the human body, in a word, all our organs and tissues, possess the property of transmitting sound.

Again; you may collect fifty different hypotheses on the manner in which the circulation of the blood is carried on. Some have even gone so far as to consider the heart as a kind of *balançoire* that regulates the movement of the blood. Persons who fall into such hypotheses must evidently be ignorant of the physical sciences. Unfortunately for its advancement, physiology is studied in books, instead of being studied by experiments on the human body; and hence the various absurd theories by which it is disfigured. One would even imagine that it is not ignorance alone which manufactures these hypotheses, but the pleasure of making them. Unhappy pleasure; for it casts the mind into a vague chaos, and arrests the march of our science.

It is only by studying the phenomena of physiology in connection with the laws of natural philosophy, that we can hope to arrive at profound and extensive knowledge. Hence let me advise you, above all things, to acquire a competent share of knowledge in the physical sciences, for without this you will find it impossible to ascertain or explain the most simple phenomena. Thus, for example, let us take diseases of the heart, diseases of which a great deal is said, and which possess considerable interest for the medical practitioner. Here we are of necessity compelled to examine the different sounds of the heart, both in a normal and a diseased state; but if we are unacquainted with certain facts of natural science, relative to the sounds produced by liquids passing through tubes,—if we do not know in what cases those liquids may pass without giving rise to any *bruit*,—in what other cases they produce the *bruit de soufflé*, &c., we shall never be competent to examine the important subject of diseases of the heart, which every physician ought to be acquainted with. Be assured, that with a proper knowledge of hydrodynamics, you will be convinced of the utter impossibility of producing certain sounds which are attributed to the heart under such and such circumstances. Some writers affirm, that the sounds, the *bruits*, of the heart, are produced by the displacement of its valves. To this mechanism they attribute the origin of its double palpitation. Would this hypothesis have been invented—would a similar explanation have been received—if physicians had observed or reflected on what takes place in consequence of the shock of one elastic body against another? Certainly not; and the theory of the valves, as a cause of sound in the heart, however ingenious it may be, would never have been adopted. Keep, then, your theories for cases where the physical sciences are not as yet able to shed their light upon physiology, as for the sounds that take place in the interior of vessels, the aorta, carotid arteries, for example, —sounds that we cannot easily explain, because we know little or nothing with respect to the laws that govern the production of sounds under these circumstances. However, we must not neglect the phenomena presented by the movement of a fluid through elastic tubes. These phenomena are connected with the production of sounds, and may be observed equally in inert as in living bodies.

Thus you see how necessary it is to become familiar with the physical sciences, if we desire to advance the progress of medicine: we must follow their steps, arrest our march where they stop, and wait until they have attained a further degree of perfection; it would explain various physiological phenomena which cannot be understood without their aid. The day that natural physiology shall have furnished us with new data, physiology may advance a step further, and commence to follow the more exact science in its progressive development. Believe me, the physical sciences are, in all cases, necessary to the advancement of our professional knowledge: we cannot exercise medicine in an honourable or honest manner, if we are completely ignorant of them. I do not speak here of men who are content with an obscure existence, into which the idea of distinction and future renown never enters—of men who consider the exercise of medicine merely a

trade, whose sole object is the acquisition of wealth. No, Gentlemen, I speak of those who look up to medicine as a *science*, and pursue its study with *ardour* and *enthusiasm*, who investigate with *patience* its various branches, and become, as it were, personified in the advancement of the science to which they are devoted. Unhappily, at the present day, in France, the title of "physinian" alone is not sufficient to confer an honourable rank in society; and perhaps this neglect is not, in some respects, unmerited: how, in fact, can we expect unprofessional persons to look up with respect to the physician, when he remains dumb in the society of men who are distinguished for a knowledge of the natural sciences—when he shows himself completely ignorant of the facts which form the subject of conversation? And why is this? Evidently because the physician neglects the accessory sciences, and devotes himself, with ardour, to every hypothesis which is produced by an active imagination, rather than be confined to sober, positive, and indisputable facts. Look at the *Polytechnic School*. Why are its pupils esteemed and looked up to wherever they go? Why do they occupy a rank so much superior to that of the student in medicine? Because their knowledge is more extended, and, on quitting for ever the class-room, their scientific education is much more complete than that of the medical man.

The value of accessory knowledge is too much overlooked in our profession, and nothing is more absurd than to deny the influence which the physical sciences exercise in physiology. Let us mention another example. What is typhus fever? It is a disease in which a chemical alteration of the blood is a principal phenomenon. It is evident, then, that our knowledge of the disease would be advanced, that we should arrive at important therapeutic results, if we could discover the precise chemical changes that take place in the composition of the blood: this once known, we might hope to render our observations available. The discovery of the nature of typhus fever requires, it is true, a man of genius; and, in the meantime, we are compelled to hesitate between one theory and another. Thus, in the same hospital, you will see the same disease treated by two professors, after two completely opposite methods. As for myself, when a patient affected with typhus fever is placed under my care, I feel that I have to do with an alteration, or a chemical modification, of the blood, which I cannot explain. I therefore turn round to the pupils who follow my visit, point out to them what is unknown in the science, and direct their attention to the necessity of examining this question; and hence, if amongst those to whom I address myself, there chance to be a genius, destined one day to advance the science of medicine, I show him the deficiency which exists, and, at the same time, indicate the path by which he may be led to supply it. An observation, a single word, is frequently productive of scientific results. How often does it happen that a word seized upon and developed by an elevated mind, becomes the occasion or cause of immortal discoveries! If, on the other hand, instead of pursuing this course, I were to amuse the pupils with brilliant theories, what would happen then? Those theories would pass for facts, the mind of the pupil would be directed in a false path, an error would receive additional confirmation, and genius would be turned aside from the phenomena which it should observe, to follow idle, and probably false, speculations. Look at the history of inflammation; on that, also, the physical sciences throw an immense light; they commence by showing the absurdity of a term which bears the stamp of the barbarous age in which it was adopted. "*Inflammation!*" In the pathological change which this word designates, do we discover *fire*, or *flame*, or any thing analogous to it? In inflammation, Gentlemen, there are phenomena which we must study rather as natural philosophers, than as physiologists, or pathologists, and upon which we have still many researches to make, before we can discover its true nature.

To resume what we have said, let us observe, that two distinct orders of phenomena present themselves in the living being,—one purely *vital*, the other *physical*, or chemical; and the physician should be acquainted with the latter, not only because they exist in the machine whose functions we have to observe, whose modifications we must study, whose lesions we must investigate, but also because the physical phenomena are capable of throwing the greatest light on the vital. Perhaps the time is not far off when, aided by observation and experiment, the physiologist, like the natural philosopher, may withdraw himself from the baneful influence of theories, overthrow the prejudices which oppose his progress, and advance forwards in the path of science. In the study of every disease we should be most careful to examine what is purely physical, and separate it from what is vital. This is true, also, for the state of health, where it is impossible to obtain correct notions of animal life, unless we distinguish the physical from the vital phenomena. This, Gentlemen, is the point which, for many years, has chiefly occupied our attention; it is by this means that we have been enabled to overthrow several prejudices that were admitted amongst the facts of our science. Let us hope that natural philosophy and chemistry will no longer remain divorced from medicine. This year we propose speaking of the nervous system; we shall constantly have occasion to speak of vital phenomena, for physical phenomena are but seldom observed

in connection with this system. It is by observations made on the living body, and experiments on the dead, that we can ascertain the nature of the latter; and here we shall take up a subject of very great interest and importance, viz., the relation which exists between the nervous system and electricity.

Before I enter on the immediate matter of the present course, permit me to review for a few minutes the general principles which I have laid down in this lecture. I said that it was indispensable for the advancement of medicine to ascertain how far the physical sciences are useful in the study of physiology, and I endeavoured to show you, that it was impossible for the physician to make any remarkable or real progress in the art to which he is attached, without possessing a certain acquaintance with chemistry and the physical sciences; and that if he neglects altogether to acquire knowledge of this kind, indispensable to every medical man, he not only places himself in a most unfavourable position, but actually abandons those high principles of honour by which all the members of our profession should be incessantly stimulated.

Gentlemen, there is not a single act in the life of the physician, which is not in some way or other connected with the physical sciences; every time he approaches the sick-bed he will find occasion to apply them in a useful manner; and if this be true of medicine in general, how much more sensibly is the want of physical knowledge felt, when we come to study the nervous system, and the various phenomena connected with it? It is unnecessary for me to dwell at length on the importance of this system, which leaves far behind it every other organic apparatus; suffice it to say, that we cannot discover a single act of our life in which its influence is not manifested, and that the very first step we take in investigating its attributes, will show us how utterly impossible it is to acquire any precise notions without the aid of the physical sciences.

If you examine the human body in its healthy state, and fully developed, you cannot avoid perceiving that the functions of life are, as it were, a mould to which the phenomena of the great system of the Universe are perpetually adapting themselves. These two systems of existence are so intimately connected one with the other, that we can scarcely credit the good faith of certain men who affect to regard their phenomena as perfectly distinct, or who affect to explain them by the strangest hypotheses. Let us take, for example, the sense of sight. The eye is far superior to any optical instrument that we are acquainted with; it presents all the circumstances which are united in an optical instrument; and where the optician wishes to produce any thing of a perfect nature, it is the eye which he takes for his model; in short, it was the human eye which gave the first idea of achromatic glasses. The optician is obliged to understand in what manner light, the special excitant of the organs composing the visual apparatus, is presented to the sentient surface by a special apparatus; he is compelled to study this apparatus, for it is here that he learns how one portion is destined to modify the light; how a] second receives the impression of that fluid; and, finally, how a third transmits this impression to the brain. Yet the medical man, so often called on to examine and remedy the lesions of the eye, believes that anatomy alone will furnish him with sufficient means. Is this the case? Certainly not. You may examine the eye, as an anatomist, with the greatest care and minuteness; but if you are unable to understand the physical effects which its various lesions are calculated to produce, you are totally unfit to direct the means best adapted for their removal.

Let me remark to you, in addition, that it has only been since the functions of the human eye have been studied in a proper manner, that we have attained the power of constructing optical instruments in that perfect degree which has communicated so many positive and valuable notions of a physical nature. Now, what could have been done in this way, without a knowledge of the mechanism of vision,—without knowing that the luminous rays which traverse the cornea and lens alone serve the purposes of vision,—that the cornea acts with greater energy in bringing together the rays, in proportion as the difference between its refrangent power and that of the air is greater? Evidently nothing. Is it not a melancholy thing to see men completely ignorant of these almost elementary principles, who, from the profession which they follow, should be familiar with them? And when natural philosophers have recourse to physiology to aid them in the explanation of various obscure phenomena, or in the discovery of new facts, should not we, who occupy ourselves exclusively with physiology, be ashamed if we were ignorant of the most essential phenomena connected with the science, and thus unable to aid its progress?

Let us pass from the eye to the organ of hearing. You will find in the ear the same conditions that you observed in the eye for the transmission of light, but here the apparatus is disposed for the transmission of sounds. Look here at the pavilion, capable, on account of its elasticity, which, moreover, may be slightly modified by its peculiar muscles, of entering into vibration under the influence of sonorous undulations which reach it through the air. Now, let me ask you, is it not important to know that this

pavilion is not necessary for audition? That it may be removed from animals, and even man, without necessarily bringing with it the loss of the power of hearing? Look at the manner in which the tensor tympani muscle is attached; look at the tympanum itself, a dry, elastic membrane, which communicates sound, on the one hand, to the air contained in the cochlea, and, on the other, to the chain of bones extending from it to the membrane of the labyrinth.

Although our physical knowledge is much more advanced on the question of light than on that of sound, yet it is clear we could never make any progress in the study of the organ of hearing without thoroughly understanding the laws which govern the transmission of sounds. Amongst the sounds which have been most studied by natural philosophers, are those resulting from the vibration of liquids, and upon this point the observations of the naturalist on inert bodies should be completed by the experiments of the physiologist on the living animal. Here the beautiful researches of M. SAVARD present themselves to our notice; but we shall have more than one occasion to recur to them, at a future period of the course.

The observations which we have just applied to the organs of sight and hearing, may also be applied to the olfactory apparatus. Here, again, we find a mechanism truly physical, whose object is to arrest the odoriferous particles detached from bodies, (particles so minute as to escape the most powerful microscope,) and bring them in contact with the nervous expansion, which, in its turn, is destined to receive a peculiar impression from the particles, and convey it along the nerves of smell to the brain. In fact, it is easy to show that the odoriferous particles are arrested by the inequalities of the pituitary membrane, and that, too, exactly in those points which are most abundantly furnished with filaments from the first pair of nerves.

Thus, Gentlemen, before we arrive at the nervous system in general, the three sets of nerves just mentioned, the optic, the auditory, and the olfactory, presents each a distinct physical system, with which the medical man should make himself thoroughly acquainted. I shall not extend this brief examination to the other senses; the part they play, in a physical point of view, is not quite so important or extensive, although we might easily indicate the physical conditions which preside over the functions of each. Thus, to make one example serve for all, the simple phenomena of contact includes the organ of touch, for the recognition and appreciation of space, temperature, &c., and even, as some observations would seem to prove, colours.

But remark, that beyond all these apparatuses you come to organs which form a portion of the nervous system.

REPORT OF THE ADDRESS

DELIVERED AT THE COMMENCEMENT OF THE

MEDICAL SESSION OF 1836-37,

AT

THE LONDON UNIVERSITY,

By PROFESSOR A. T. THOMSON.

Hospital and Medical School of the University.—Dr. Quain and Professor Sharpey.—Past, present, and prospective states of the Profession.—Medical Apprenticeships.—Knowledge of Latin and Greek.—Decision of Character.—Medicine and the Accessory Sciences; Order of their Study.—Clinical Instruction.

GENTLEMEN:—To the friends and supporters of this great Establishment, and, indeed, to all who rejoice in the diffusion of education and the extension of knowledge, the encreasing success of its medical school cannot fail to be observed with feelings of the highest gratification. In performing the allotted duty of opening this session, I have only to refer to the report of the Dean of the Faculty, who, at the annual meeting for the distribution of prizes, afforded ample proofs of the numerical increase of the school. He informed us, that the students in the session 1835-36, amounted to 424, being an increase of 51 upon the preceding session, and a demonstration of the prosperity of the school, affording "the most conclusive evidence, that the system of instruction adopted at the outset, and since invariably pursued, is suited to the wants of society." Were any further proof required in support of this opinion, it might be drawn from the professional characters of those gentlemen who have completed their medical education within these walls; and who are now, in various parts of the British dominions, deservedly securing to themselves the confidence and respect of their fellow subjects; and, in their practical career, lending their exertions to elevate the standard of medical science.

Keeping pace with, and aiding the advancement of, the medical school, is that of the hospital attached to it. The benefit which that branch of the establishment has afforded to the public is rendered evident by the number of patients to whom it has supplied medical aid since its opening, in November, 1834, namely, 7,015. The appreciation of the advantages derived from its clinical practice by the students, is best displayed in the increase of their number, and the amount of the fees, which are wholly appropriated to the support of the hospital. The number of students entered, from the opening of the hospital, on the 1st of November, 1834, to the 1st of October, 1835, was *one hundred and fifty;* the amount of fees,

£3,130 1s. The number of students, from the 1st of October, 1835, to this day, the 1st of October, 1836, is one hundred and sixty-four; the amount of fees £3,436 13s., making an increase of fourteen students, and of £306 12s. on the fees.

Satisfactory as are these reports, it is yet more gratifying to contemplate the probability of the still increasing prosperity of the school, from the establishment of the Metropolitan University, by the means of which all the honours of the profession will be opened to students educated in London, an advantage which, extending to all the great medical schools of the Metropolis, must excite, as the Report states, "a generous rivalry," founded on the qualifications of their several students, which "cannot fail of being beneficial to the public at large."

Amidst these causes of rational exultation, it would have been in vain to expect that no shadow should fall amidst the sunshine which brightens our prospect,—no circumstance arise to awaken regret. The futility of such expectations, had they existed, would be deeply impressed upon all of us, by the loss which the school has sustained in the resignation of the chair of General Anatomy and Physiology, by Dr. JONES QUAIN. The recession of such an able and excellent individual cannot be spoken of as it has been felt. Independently of his erudition and the extent of his intellectual acquirements, which enabled him not only to fulfil most ably the duties of the chair which he adorned, but to embellish and render highly attractive his subjects,—Dr. Quain's amiable disposition and gentlemanly deportment; the benevolence of his heart, the warmth of his friendship, and the kindness of his nature (*long continued applause, heightened during the entrance, at the moment, of Professor S. Cooper*) endeared him to his colleagues, and rendered his association with them, in the cultivation of science, a source of sincere satisfaction, enhanced by the ties of friendship. It is pleasing to dilate upon the genius and merits of so gifted an individual. The advantages which the pupils derived from Dr. Quain's prelections were great. His knowledge of his subject was minute; his illustrations of its doctrines were copious and appropriate; his manner was attractive and impressive. Endowed with a natural eloquence and a refined taste, yet with a mind tutored to that severe precision which alone can preserve the physiologist from the labyrinths of hypothesis, Dr. Quain, besides instructing his hearers, exemplified the great advantages of a regular education, the power which varied knowledge bestows upon the judgment. But, besides these qualifications for a teacher, Dr. Quain's philanthropy led him to take a deep interest in the personal instruction and welfare of his pupils, by instituting particular examinations, and other means of communicating knowledge, which the duties of his professorship did not demand.

Such is the colleague whose retirement we have to lament; but, distinguished as he is, it would be absurd to suppose that his loss cannot be supplied. If the testimony of men of the highest rank in science, and of the most unequivocal honour, can be depended upon, we rely, with well-grounded anticipations, on finding equal erudition and reciprocal energies in Dr. SHARPEY, who has been elected his successor.

Some strictures on the mode of electing this gentleman have been published in one of the medical periodicals. This is not the place to examine any question which admits of much diversity of opinion; but I conceive it proper to mention, that the method adopted was that which is usual on such occasions; that the opinion of the Committee respecting the testimonials of the different candidates was unanimous respecting those of Dr. Sharpey, and that they felt themselves fully justified in recommending him as the fittest person to fill the vacant chair. On my own part, it is only justice to say, that I went into the Committee with no partiality towards Dr. Sharpey; but the evidences of his talents, of his erudition, and of his accurate acquaintance with general anatomy and physiology, were more than sufficient to overcome every doubt, and to constitute my suffrage for him a matter of conscience and honour. To follow, successfully, such a lecturer as Dr. Quain, requires no ordinary talents; but the Professors, relying upon the opinions of others well qualified to judge of the merits of the gentleman they recommended, look forward with confidence to his filling the chair of his predecessor with credit to himself and to the reputation of the school. In all elections, it is undoubtedly the interest of the Professors and of the Council to divest themselves of private feeling—to allow "no personal friendship—no party connexion—and no professional interest, to predominate in the choice," but to be guided solely by the good of the establishment. Upon such principles, the election of Dr. Sharpey to the vacant chair of General Anatomy and Physiology has been conducted.

Gentlemen, having made these remarks on the medical school of this establishment, I now propose to lay before those gentlemen who are crowding forward to fill our theatres, a brief comparison between the medical profession as it is now practised, and its condition half a century ago, to point out some qualifications which are requisite for its successful practice, and the mode of studying it; and to enforce upon the minds of those who have completed their medical education here, the propriety of maintaining their connection with the school, and the

claims of their Alma Mater upon their respect and gratitude.

With regard to the profession, its importance has never been seriously questioned; and so long as pain and sickness are entailed upon mankind, every one, as an elegant writer (Dr. John Gregory) has justly remarked, "who suffers these inflictions will very gratefully acknowledge the usefulness of an art which gives him relief." It is, nevertheless, a trite saying, that medical science is still in its infancy; yet there can be no doubt that its progress, within the last thirty years, is unexampled in any other profession. This remark is forced upon me by the retrospect of the inferior acquirements of those whom I recollect to have obtained the degree of Doctor of Medicine at distinguished Universities, compared with those of gentlemen who now are licensed to practise as surgeons and apothecaries, or general practitioners. At that time dissections were rarely attempted by the pupil; Natural History and Botany were neglected; Chemistry was indifferently acquired, and Materia Medica was known only as a catalogue of drugs: now, as these, in conjunction with Physiology, are the very foundation of medical science, we may form some idea of the attainments of those who were so defective in its elementary studies. I will not assert that, at any period in this country, the interest of the practitioner has been entirely "separate and distinct from the honour of the science;" but I do maintain, that they are now more intimately connected than ever, that there is less of the trading spirit amongst the members of the profession, and that their private interests are now regarded as greatly dependent upon accurate knowledge, and with that system of conduct which is most likely to uphold its dignity. I do not intend, however, to assert that the profession has yet arrived at that enviable period, when its honour alone shall form the motive of action among its members; on the contrary, I must reluctantly admit, that some, even amongst its highest ranks, are not altogether free from that feeling which separates private interest from professional honour. Individuals are, I fear, still to be found, who have acquired wealth and importance by the exercise of mean and unworthy acts, who have not only aided the credit too readily placed by the public in nostrums and quack medicines, but have themselves boasted of the infallibility of particular medicines which they have prescribed. But such examples are few, and the change which has taken place in the honour and manners of the profession has justly enhanced the estimation in which it is held by the public, and has brought into its ranks individuals of higher parentage and more liberal education. I will now briefly notice some of the alterations which have resulted from this elevation of feeling in the practitioners of the healing art. The most striking is the almost complete extinction of the description of practitioners who were known under the designation of *pure apothecaries*,—individuals who rarely attempted the treatment of serious disease, who followed the physician as his shadow, without, as in the present day, affording him any substantial aid, and whose chief occupation was to compound the medicines which the physician ordered,—individuals who, although they were regarded as the physicians in ordinary, and ventured to treat trifling cases of disease among the better ranks of society, and all cases amongst the inferior ranks, yet, in many instances, had not the advantages of a regular medical education, but were brought up altogether at the counter. When the pure apothecary undertook to manage cases of disease without the assistance of the doctor, he was guided solely by routine; and rarely could boast of sufficient skill to combat any new or untoward symptoms that presented themselves. Such persons felt no deeper interest in the patient than resulted from the quantity of medicines swallowed. Their reputation was solely involved in the purity of the drugs which they dispensed, and in the care with which these were compounded; their aim was to uphold the trading part of the profession, and their gains were in proportion to the quantity of medicines sent, whether taken or thrown aside by the patients. Another, and even a more disgraceful circumstance, painful as it is to expose the truth, was connected with this state of things, namely, the fact that the fortunes of physicians frequently depended on the patronage of these apothecaries, and, consequently, their obligations to them were often repaid by prescribing medicines, either in such form or in such quantity as no honourable member of the profession can reflect upon without disgust. In hazarding these remarks, I trust that I shall not be supposed to throw any reflections upon individuals who may have practised in the branch to which I allude. The improved condition of the healing art has rendered its existence no longer necessary, nor, so far as regards the sensible portion of the public, available. But when this mode of practice existed, the individuals who exercised its functions were not aware of the degradation of their station—education had not rendered them sensible of the distinction between trade and science. But now a new race of apothecaries, or, rather, as they are aptly termed, "general practitioners," exists—men whom the law requires to be educated, and on whose medical skill the great mass of the community justly relies,—men, who, individually, are well acquainted with disease in all its forms, its rise, and progress, and with the "hereditary constitution," habits, and temperaments, of

their patients. This branch of the profession has furnished individuals who, by their genius, observation, and industry, have advanced the practical part of medicine in a remarkable degree, — who have not too hastily attempted to reduce the facts which their experience has accumulated, to general laws; but who, by a patient investigation, have afforded materials for the most accurate deductions, and to whose labours are chiefly due the improvements in that important branch of our art which relates to the effects of medicines. The education which formerly was confined to the physician, has been extended to the general practitioner, and has been made more practically valuable by having engrafted upon it a knowledge of surgery. I am aware that this opinion of the advantage arising from the combination of medicine and surgery is adverse to that of several distinguished men. "The distinction," says Dr. Percival, "is sanctioned both by reason and experience." I cannot concur in that opinion, and I would reply, that the beneficial effects of the combination have been exemplified in many instances, and in some of the most venerated of our predecessors, namely, HILDANUS, SEVERINUS, BARTHOLINE, and ABERNETHY.

If such be the improved condition of the general practitioners, it is to be lamented that the remuneration which he receives is still seldom bestowed for his skill in the treatment of disease, but generally for the drugs which he has supplied. There can be no valid objection to the general practitioner dispensing his own medicines, but either no charge should be made for them, or it should be so low as to render it impossible for the patient to imagine that it can compensate for the skill and the time of the prescriber. Would that I could clothe myself in the mantle of prophecy, and foretell the day when the education of every member of the profession shall be *equal;* when nominal distinctions and privileges, depending on the locality of his studies, shall give no man advantages over other men who are in every respect his equals in merit; when even the title of "Doctor" shall cease to command respect for itself alone; but, in conjunction with every point of professional precedence, shall be the reward of superior acquirements and accumulated experience! (*Great applause.*)

For the sake of the young pupils around me, I think it necessary to remark that, by the term "experience," I do not imply the opportunity of seeing or treating a great number and variety of diseases. A medical practitioner may be continually looking upon disease, and yet not profit by his experience. True experience is founded upon the correct observation of symptoms, and generalizing and storing them in the memory, to assist the judgment, and regulate the reasoning, which is to direct the treatment in other cases. This kind of experience, unless the judgment be misled by imagination, modifying the evidence of the senses, is the basis of all successful practice. It is, in truth, this habit of correct discernment, joined to quickness of apprehension, and solidity of judgment, which raises a practitioner above the ordinary level of his fellows,—which places him, in bold relief, before the public, and stamps him as possessing that medical genius which inspires confidence, and ensures success.

Another change, which a more elevated view of the profession has produced, is an alteration in the nature and period of apprenticeships. Upon no subject, perhaps, do more various opinions exist; but, as the system is general in England, and is sanctioned by law, I shall only make a few remarks on its operation on the master and the pupil.

If we regard apprenticeships as they are usually passed, they are apparently highly objectionable; but, if we consider them as they ought to be, many arguments may be advanced in defence of the system. Perhaps one of the strongest is the expediency of placing young men, at the age of sixteen or seventeen years, under moral and intellectual discipline; and, was this duty attended to, most persons would concur in the opinion, that *two* or *three* years, certainly not *five*, could not be more advantageously spent than under the roof of a respectable and well-informed practitioner. During the attendance at medical schools, and in the hospitals, the society and temptations with which a young man may be surrounded are not likely to improve his moral or religious opinions, or to confirm him in habits of study or self-government. On the other hand, the necessity of restraint being admitted, if the subordination was tempered by good sense and a knowledge of the human character,—and if the master always displayed the inclination, and possessed the ability, to advance the intellectual attainments of the pupil, all objections to apprenticeships would be silenced. During an apprenticeship, the classical knowledge of the pupil should be fostered by the perusal of works connected with medical literature. It is then, also, that he should acquire, if not already possessed, a knowledge of French and German, which are now almost indispensible for every professional man, as the keys of the most extensive information connected with medical science which books can afford.

Objections have been advanced against the acquisition of the dead languages preparatory to the study of medicine; and, it has been asserted, that it occupies a portion of life that might be far more profitably employed. Classical learning is not absolutely essential to the practice of medicine; and many excellent practitioners have

possessed scarcely knowledge enough of Latin to suffice for the prescriptions which they were in the daily habit of writing; yet, I must contend, that no practitioner devoid of a moderate share of classical learning, is fully educated. Were the consequences of its possession even limited to the mere gratification of drinking from the fountains whence so many streams of knowledge have flowed, I should scarcely join in the complaint that it is a waste of time; but, when we regard classical learning, like mathematics, on account of the difficulties to be overcome in their acquisition, well calculated to form habits of perseverance and application, we must consider them as preliminary branches of study, constituting a most important mental discipline. It is true that other intellectual drillings, on objects more intimately connected with the future occupations of the medical student, might be substituted for Greek and Latin; but is the world, I would enquire, reduced to such a condition of utilitarianism that every ornament and grace are to be rejected, and the pillar stripped of its capital, because the unadorned shaft is capable of supporting the edifice? I hope such reasoning will never prevail; and that neither the voice of sloth on the one hand, nor the cant of utility on the other, will cause those studies to be neglected, which tend to refine the wit, enlarge the understanding, and bestow energy on the whole of the intellectual faculties.

During apprenticeships, also, the pupil may acquire a knowledge of the theory of many of those branches of science, the study of which he will afterwards be required to pursue, and thus lay a foundation for deriving more substantial advantages from his subsequent attendance on lectures. But apprenticeships have not been often conducted in this manner: and after the pupil has been taught to compound medicines, the sum of his acquirements, in five years, is an imperfect acquaintance with the treatment of a few ordinary diseases, without at all understanding their nature; the performance of some offices about the sick; patience in watching the operations of nature in parturition; and the management of such accidents, and the method of performing the minor operations, that occur in general practice. This latter knowledge, it must be admitted, is not unimportant, and it cannot be acquired elsewhere: but as the management of even the simplest disease, without principles, cannot advance the knowledge of the pupil, false conclusions are drawn, and prejudices implanted, which must be rooted out before he can benefit by correct clinical instruction.

Many other evils connected with apprenticeships, as the covenant is usually performed, might be adverted to; but instances of liberal feeling are now becoming more frequent: the two last years of the apprenticeship are often devoted to the attendance on medical lectures; and, in proportion to the improved education of the master, the prior years spent under his roof are now so occupied as to prepare the mind of the pupil for these prelections. Is it too much to expect, that ultimately we may witness the total abolition of a species of training, which at no period has tended to advance the true interests of the healing art?

An opinion has, nevertheless, been maintained, by very distinguished men, that the nature of society demands a set of practitioners who can be efficiently educated behind the counter,—men destined to practice in obscure villages, whose acquirements would not unfit them for associating with the farrier, the little tradesman, or the midwife. The promulgation of such an opinion, by such men as I have heard support it, appears to me extraordinary. So long as the same diseases afflict the rich and the poor, to permit the latter to be the victims of inadequate practice is atrociously cruel. (*Great applause.*) "Every improvement," says one of the soundest of modern medical writers, (Dr. Percival) "is a public good, benefical to the poor as well as to the rich, and to the former in a proportionably greater degree, as they are more numerous, and, consequently, more frequently the objects of it."

Parents often display little discrimination in choosing medicine as a profession for their sons, although no profession requires the genius and moral qualities of those who are to practise it to be more carefully studied. Taking it for granted, however, that all of our young friends now assembled have had the advantage of the soundest judgment in the choice of the profession, I shall briefly point out to them the connection of the different branches of science which they will be required to study.

But, first of all, permit me, my young friends, to recommend you assiduously to cultivate decision of character. I speak to you with the confidence of one who has spent upwards of the third of a century in the practice of his profession. Nothing is more important to the student than *decision* of purpose. The plan of study which he must pursue, should be followed with steadiness and consistency. It is true, that both studies and conduct must sometimes be accommodated to the train of events; but, when these are adverse to your object, exert decision of purpose, to struggle against their influence. A person of decision cannot remain quiescent amidst unexecuted projects: obstacles to his progress only arm him with determination to overcome them. It is only those, so qualified, who can clear the obstructed path to fortune and honour as practitioners. In actual practice, this decision will assist you greatly in determining the management of cases, where energetic means are indispensable, yet in which the condi-

tion of the patient renders their employment doubtful. It aids not merely the judgment; it bestows the power of carrying your intentions into effect: for, in such cases, a strenuous determination to act must accompany the conclusion of thought; the moment of finishing your deliberation, should be that of commencing the execution of your plans.

This point in character also prevents the imagination, always lively in youth, from leading you to adopt theories of disease, founded on few and slender facts and vague analogies. Finally, it stands in the place of friends, and upholds a man in the moment of their desertion. His desolation only quickens his invention; and, with the conviction of possessing a mind which ordinary circumstances can neither depress nor intimidate, his plans will be executed with energy and determination, the surest harbingers of success.

To the preliminary studies for a professional education, I have to add the *art of drawing*. Every practitioner who has felt the advantage of preserving the real appearances of morbid parts, and has been deficient in the use of the pencil, cannot fail to lament this defect in his education. We have, indeed, no occasion to seek beyond the walls of this establishment for demonstrations of the utility of this delightful art. The splendid collection of graphic specimens of pathological anatomy, the labours of Dr. CARSWELL, is one of the most valuable possessions of our medical school. (*Applause.*)

Among other preliminary studies, I have mentioned natural history and natural philosophy. Many of the facts which they teach bear upon the practice of the profession, and to these your attention should be chiefly directed. Thus, a knowledge of the principles of mechanics greatly assists the study of anatomy, and the operative part of surgery: whilst the laws of hydraulics, optics, and pneumatics, are as essential as chemistry to the investigations of physiology, the foundation of the rational practice of medicine. At the same time, you must not forget that the operations of the living system are influenced by a set of laws which are totally distinct from those of mechanics and chemistry,—an innate power, the principle of life, which, through the medium of the nerves, regulates and modifies all its phenomena.

The nervous system, again, cannot be well understood without some knowledge of that branch of philosophy which treats of the faculties of mind. Such knowledge enables the physician to study with advantage the influence of the mind upon the body in health and disease, and that of both mind and body upon one another. I need scarcely say, that by the philosophy of mind I do not mean metaphysics, against which I would caution you in the words of the celebrated author of the duties and qualifications of a physician,—"A student of genius," says he, "should be watchful, lest his attention be too deeply engaged by this specious kind of philosophy, which gives so much room for imagination, and so little for experiment,—apparently ingenious, but really trifling and useless,—a philosophy, in short, which, by keeping the mind incessantly employed about subtleties of its own creation, soon renders it incapable of a patient and severe investigation of nature."

By the regulations of the Apothecaries' Company, the branches of medical study to which you will first have to direct your attention are Chemistry and Materia Medica.

With regard to the former, its utility to the study of medicine cannot be doubted. The nature of the solid and fluid contents of the body, the changes which they undergo, and the play of affinities by which they are affected; the secretions formed by the different organs; the functions of the lungs and the skin, are all elucidated by a knowledge of chemistry, and are obviously within its domain. It is also the foundation of materia medica and pharmacy; and, so far as concerns pathology, the various changes induced upon the fluids in disease, the defective assimilation of the food, and much of the influence of medicines, can only be explained on chemical principles; thence, in order to understand physiology and therapeutics, the previous study of chemistry is indispensable. But this branch of science holds out attractions of its own, sufficient to bind the attention of the student.

With respect to materia medica and therapeutics, which truth obliges me to say are misplaced in the curriculum of the Society of Apothecaries, I shall at present say little, as it is my province to address those gentlemen who are about to commence their medical studies here, upon the subject. I shall merely remark, that no individual can practise medicine aright, without a competent knowledge of both these branches of study.

Closely allied to, and illustrative of, materia medica, as well as subservient to the practice of medicine, is the study of botany. The investigation of plants, according to their natural affinities, that modern improvement in this branch of science, which not only makes us familiar with the characters of plants, but with their qualities, is that which is successfully taught in this establishment. Botany has only of late years, however, been made an imperative portion of medical education; but the former neglect of it does not lessen its value; and no practitioner can be regarded as regularly educated who is unacquainted with those plants which are either useful in diet or in medicine, and with the general principles of botany.

The necessity of an intimate acquaintance with anatomy and physiology is too apparent to require illustration. To examine the animal body as a machine, made up of many parts, is the object of the former: and as an attendance upon lectures alone will not suffice for that purpose, a considerable portion of your time will require to be occupied in the dissecting-room. But after all your investigations there, you will be only acquainted with the body deprived of action; you hasten, therefore, to investigate the functions of the parts which you have examined; their reciprocal influence upon one another; and their common moving cause. Your next object is to investigate the composition of the body as composed of solid and fluid parts; to scrutinize the functions which tend to support life and health; the senses which maintain the connection of man with the external world; and the influence of external agencies, air, light, and heat, upon the living system. These are the objects of physiology. In truth, without a competent knowledge of anatomy and physiology, the distinction between sound and diseased conditions of the animal economy cannot be detected, nor disease rightly understood. These facts, also, point out the natural union of anatomy and physiology, and the propriety of investigating them as one department of study.

The light which comparative anatomy and zoology reflect upon human anatomy and physiology is well known. It has been justly remarked, that "the basis of our physiological researches becomes broader and deeper, in proportion as our survey of living beings is more extensive;" and it is a matter of deep regret that these branches of science are not in the curriculum, which at present fixes your course of studies. To the student, however, who is sincerely anxious to perfect his medical education, both hold out sufficient inducements to engage his attention. Their importance and utility are now beginning to be felt, and we find that lectures upon them are announced in several of the metropolitan schools. It is a subject of exultation to this establishment, that it was the first in England to found a professorship expressly for the cultivation of comparative anatomy and zoology.—(*Applause.*)

Another extraordinary defect in the existing plan of medical education, is the absence of pathological anatomy, a subject so closely connected with practice, that it is scarcely possible to advance a step without it. Let me impress it strongly upon the minds of all our young friends, not to permit the opportunity of studying it with advantage, which this school affords, to escape them.

On the more practical subjects of study, namely, the practice of medicine, surgery, obstetrical medicine, and medical jurisprudence, it is unnecessary to make any comments, as the exercise of your profession presupposes their previous study. I have only further to add a very few remarks on clinical instruction. It has been correctly said, that "it is the most interesting point of medical study, and calls for the employment of the highest faculties of the mind, intelligence and observation, as well as judgment, to generalize the facts observed, so as to reduce them to laws." But how is this intelligence and observation to avail without the previous knowledge of the organ or organs affected, and of their functions? Thence it is altogether upon the present employment of his time that the student can expect in any manner to benefit by clinical instruction. Pathological anatomy, especially, is of the utmost importance; it not merely detects the seat of disease, and its influence upon certain organs, but it developes many of the laws of diseased action, and explains, in the history of the symptoms, many circumstances previously involved in obscurity. Without it the examination of bodies, in fatal cases, is little more than a waste of time: the exploration cannot be satisfactory if the eye be unacquainted with that aspect of the organs which enables us to detect changes in them. But the advantages to be derived from pathological anatomy does not end here, so far as regards clinical medicine. Besides enabling the student to appreciate the importance of symptoms, to trace the progress of diseased action, and the influence of medical constitutions upon its development, it even tends to enlighten him on the value of therapeutical agents, and consequently to practise with success.

The great utility of clinical instruction is to form young men to be correct observers, without the talent for which no individual can become a good practitioner, for it is only when a correct diagnosis is once formed, that the hand can be placed upon the remedies most likely to answer the indications to be fulfilled. It supplies that faculty of deciding quickly and correctly on a few data, which is called tact, which brings to the bed-side profound knowledge, gives certainty to the investigation of symptoms, and carries conviction to the mind.

One great advantage of clinical instruction is, to demonstrate the impossibility of treating disease according to established rules; in some degree every case is one of experiment; diseases to be known must be seen; if the eye of the student be taught to observe accurately, a habit of nice discrimination is acquired; it enables him to bring general principles to the test of experience, and to look with equal distrust on the truth of the most specious theories, as well as on the infallibility of remedies. Is it, therefore, necessary to enforce an attentive and regular attendance on hospital practice, as

leading to the acquisition of that knowledge which is the end and aim of all your prior studies, and which requires all the acquisitions which these studies are intended to bestow?

Having, I fear inadequately, attempted to sketch briefly the plan of study essential for those who are ambitious to acquire what is termed a regular medical education, it might be expected that I should say now something of the professors by whom those gentlemen who enter this school will be directed in their studies; but I shall not offend my colleagues by loading them with fulsome or exaggerated compliments; I shall merely assure our young friends, that I know them to be not less anxious of obtaining, than assiduous in communicating knowledge; and, that in performing their duties, one of their greatest pleasures is in watching every symptom of youthful excellence, and aiding those efforts towards the attainment of distinction and permanent fame, which talent and industry cannot fail to secure. But if much depends on the teachers, far more rests on the students: every thing, *literally every thing*, depends on the use which they make of the time, the irrecoverable time, allotted to education.

I should now, Gentlemen, close this discourse, which has imposed a severe tax upon your patience; but I cannot do so without addressing a few words in the frankness of friendship, yet with the feelings of a preceptor, to those who have left us, and many of whom I am proud to see again honouring us on this occasion with their presence; men before whom lies the land of promise, attainable by those exertions which were begun and fostered in this place. Is it necessary for me to urge *you*, my valued associates, in your exertions of extensive usefulness throughout your professional career, to maintain your connection with your Alma Mater; to remember what you owe to this seat of learning? If your minds are properly impressed with the value of intellectual distinction, this advice will be unnecessary; the higher you rise in your profession, the older you grow, the more fondly will you look back, with respect and veneration, upon this University. "*You* owe so much, that it is not bound to be satisfied with the gratitude of words, but is entitled to require the genuine homage of a well-spent life."*—(*Great applause.*)

* Address by the Lord Rector of the University of Glasgow to his electors, 0th Jan., 1832.—Rep. L.

ADDRESS

INTRODUCTORY TO A COURSE OF LECTURES ON

ANATOMY AND PHYSIOLOGY,

DELIVERED ON MONDAY, OCT. 3, 1836,

BY PROFESSOR SHARPEY,

IN THE UNIVERSITY OF LONDON.

Prefatory Remarks.—The distinction between Anatomy and Physiology. Elucidation of the one by the other.—Subdivisions and Uses of Anatomy. Illustration in the Secretions. Microscopic Examinations.—Study of Anatomy and Physiology by Comparisons. Illustration in Abdominal Veins of Diving Animals.—The Anatomy of Development. The Brain. The Heart.—Advantages of Demonstrative Lectures.—Conclusion.

GENTLEMEN:—In entering on the important duties which I have undertaken, and in appearing before you for the first time, I feel the difficulty of my post. I come among you a total stranger, and am aware that I have yet to gain your confidence. I appear in the place of one whose successful labours in this seminary have earned for him the admiration and esteem of all who belong to it, and whose retirement from the Institution, after having so eminently contributed to its reputation and advancement, has caused to its well-wishers the deepest regret. Of your late excellent preceptor, of his rare accomplishments as a teacher, and his high character as a man, I would willingly speak; but here, in the midst of his friends, I feel how inadequate I am to do justice to such a topic, and I know that my feeble efforts could serve only to weaken the eloquent and well-merited eulogium which we so lately heard pronounced by one who has had the happiness to know him as a friend, and associate with him as a colleague. Coming after so gifted a predecessor, I cannot disguise from myself the feeling, that my station, however honourable, is one of perilous distinction; and no temptation of ambition could have drawn me into this more conspicuous scene of exertion, had I not known what may be effected by humble abilities and moderate attainments, when joined with an earnest desire to communicate instruction, a just appreciation of the duties of a teacher, and sustained exertion in performing them.

But however well-grounded may be my confidence, that I shall be able not altogether inefficiently to discharge the responsible duties of my situation, I am yet deeply sensible how much my first efforts among you will require your indulgent consideration, and I feel that until I have earned your confidence and friendship, I shall stand in need of your favour. The kind reception which I have met with encourages me to

hope that for the present you will overlook my deficiencies, and that especially on this first occasion of our meeting you will not withhold that indulgence which I know I shall so much require.

Gentlemen,—The human body is known to us in two very different states, the living and the dead. In the living state, it is the scene of various actions, which tend to maintain life, or to accomplish the ends of our existence. In the dead body, all action has ceased, and there remains only an assemblage of exquisitely-formed parts, by means of which the living actions had been performed.

Those actions are named the *functions* of the body, and the parts employed in performing them are the *organs*. It is the object of anatomy and physiology, the studies on which we are about to enter, to investigate these organs and these functions. Whatever relates to the configuration, the structure, the position, and the connection of the organs,—in a word, all that concerns the mere structure of the body, belongs to *anatomy*. The living actions or functions of the body, and its vital properties, form the object of *physiology*. Thus, for example, when we examine the outward form of the heart, or the configuration of the cavities contained within it, the nature of the tissue of which it is composed, its situation, and its connection with other parts in the chest, we are engaged in the study of *anatomy*. But when we enquire into the phenomena which are manifested by this organ in the living body, its incessant motion, the manner in which it propels the blood in a perpetual circuit, the measure of force which it exerts, or the remarkable property on which its motion depends, our enquiry belongs to *physiology*.

These two sciences are intimately allied. The one, we have said, is the science of *organic structure*, the other that of *life*. Now, though we are far from asserting the irrational doctrine, that life is the result of organization, yet as it is only by its operations in organized structure that life manifests itself, it must be obvious that we cannot correctly observe its phenomena, nor ascertain the laws which regulate them, without possessing a knowledge of structure. Again,—although there are many instances in which the function of a part is not directly suggested by its conformation, yet there are many others in which it is so suggested, and in which the adaptation of the structure to the use is at once apparent. Whoever has made himself acquainted with the bones of a limb, the construction of its joints, and the attachments of its muscles, can, in a great measure, tell beforehand what must be its motions. In that most elaborate of organs, the eye, there is scarcely a single part the use of which might not be inferred from its structure, by one who was acquainted with the phenomena and laws of optics. But, in short, the greatest of all discoveries in physiology, the circulation of the blood, was suggested to the mind of its immortal author by anatomical facts, of the simplest character, but facts which he was the first correctly to interpret and apply. Two kinds of blood-vessels, the arteries and the veins, arise from the heart, and, after ramifying through the body, open into each other by their extreme branches. Now, previously to HARVEY's discovery, it was universally believed that the blood flowed outwards from the heart, by both classes of vessels, the veins as well as the arteries, and that after reaching their extreme branches, it returned to the heart by the same vessels in which it set out, flowing back by the arteries as well as the veins. Now, at the place where the arteries arise from the heart, small membranous flaps, named "valves," project from the inside of those vessels, and similar valves are placed in various parts of the veins; they serve, like flood-gates, to open a way to the stream in one direction, and shut up the passage against it in another. HARVEY was struck with the fact, that the valves had their edges differently directed in the two kinds of vessels,—that in the arteries their direction was such as to prevent the stream of blood from passing backwards to the heart, and in the veins it was calculated to oppose its flow from the heart towards their extremities. He thence inferred, that the blood must pass out from the heart by the arteries, and back to it again by the veins, not alternately advancing and retiring in the same channels, but passing from the extreme arteries into the veins, and performing a continuous circuit. This great discovery, which was afterwards confirmed by observations on the living body, and by experiments on animals, was thus originally suggested to its author by the structure of the circulating organs.

From what I have said let it not, however, be supposed that physiology consists in nothing more than a search after the uses of organs. The great aim of the science is to arrive at the *general laws* to which individual phenomena are subordinate. The object of the illustrations given is merely to show, that the foundation of physiology must be laid in anatomy, and if, from the extensive nature of the study, it is in some eminent schools made the subject of a separate course of instruction, the knowledge of anatomy is in such cases invariably presupposed,—that knowledge being indispensable as well for the right understanding of ascertained physiological truths, as for guiding the physiologist in his further researches.

The anatomist in pursuing his enquiries soon finds that the body consists, in reality, of but a small number of constituent materials; and that these, variously combined,

give rise to its numerous and diversified organs. As in examining a building it might be our object either to inspect the several apartments, and attend to their shape, their dimensions, and their decorations, or to enquire into the nature of the stone, the wood, and the other materials of which the edifice is constructed; so there is a twofold manner of viewing the human body. We may either examine all its organs in detail, attending to the form and construction of each, to its situation and connections, or we may consider its constituent materials or tissues in a general manner, without reference to the particular organs into the composition of which they enter. The study of the particular parts of the body, of their figure, connection, and situation, constitutes what is called "Descriptive Anatomy;" the study of the constituent textures is termed "General Anatomy." Without calling in question the propriety of these terms, which some have thought not happily chosen, it may, nevertheless, be remarked, that they are not always used in the same sense.

Descriptive anatomy thus comprehends a species of knowledge which has not inaptly been termed the "Topography" of the body. This is a kind of knowledge which is indispensably required for the safe performance of surgical operations. Let no one suppose, however, that its utility is limited to this end, important though it be: and let all beware of the error of bestowing almost exclusive attention on the anatomy of those regions of the body which are likely to become the seat of surgical operations. Had all been actuated by such narrow views, in what condition would have been the science of physiology? The roots of the nerves by which these organs are connected to the brain and spinal cord, are not likely to become the subject of surgical operations, and yet but for the careful study of their anatomy, we should have remained ignorant of the great physiological truths respecting the sensory and motory functions of the nerves, the discovery of which has shed such lustre on the recent history of the science. Discoveries of such magnitude, we may be told, can fall to the lot of very few; but there are lesser jewels in the mine of science, which he only who pursues his studies with a philosophic spirit, can ever hope to discover. Anatomy, it may be here observed, is useful in medicine, First, on account of its direct application in practice, and, Secondly, because it constitutes a large share of that fundamental knowledge on which medicine, as a science, might be said to rest. The *immediate* use is the more *obvious* of the two, and, therefore, readily attracts the inexperienced student; the beneficial effects of the *full* and *scientific* study of anatomy on the education of the medical practitioner, it requires *time* and *reflection* to discover, and hence the reason why this study is often undervalued.

General anatomy, as we have defined it, embraces all that relates to the *tissues* of which the animal frame is made up; though it is often used in a more extended, and occasionally in a different, sense. It is in an especial manner conversant with the intimate structure, or texture, of organs. On this account it has a very direct relation to physiology; for the most important vital processes are carried on in the intimate texture of parts. Thus, the changes of the blood, from its arterial to its venous nature, and from venous to arterial, the separation from that fluid of new materials for the nutrition and growth of the body, and the various processes of secretion, are the results of actions, which go on in the minutest parts of organs; and we cannot hope to become acquainted with the true nature of these actions until the structure is known in which they take place. It is true that this department of anatomy has not positively advanced our knowledge of these vital actions so much as may yet be anticipated from its further cultivation; but it has already rendered essential service, by freeing physiology from many erroneous views and futile hypotheses which were calculated to retard the discovery of truth. As an example, we may refer to the views that formerly prevailed on the subject of secretion. This, it may be explained, is a process by which fluids are separated from the blood in certain organs named "glands." Thus, the tears are said to be secreted by the lachrymal gland, the bile by the liver, the urine by the kidneys, and so forth. Now, it has always puzzled physiologists to explain how fluids, which are so different from each other in quality, could be produced from the same general mass of blood. How, for instance, the lachrymal gland secreted only tears, the breast only milk, and the kidney only urine. The glands are formed chiefly of the ramifications of blood-vessels, and of a set of tubes, named "ducts," which receive the secreted fluid from the blood and convey it out of the organ. To account, in the first place, for the escape of fluids from the blood-vessels into these ducts, it was generally believed that the extreme vessels opened into the commencements of the ducts; and then, to explain the variety in the secretions, many singular hypotheses were invented. Some physiologists conceived, for instance, that the particles of each fluid to be separated from the blood, had a size and figure exactly corresponding with the shape and calibre of the passages, or ducts, of its peculiar gland, which would, therefore, it was conceived, allow only these particles to pass, and no others. Other speculators, again, reflecting that pores, or small tubes, filled with oily fluids, were impervious to water, and that those containing watery fluids refused to transmit oil, applied this fact to explain the point in question.

They assumed that the duct of each gland contained, at the time of its original formation, a portion of its peculiar secretion, which permitted the passage of more of the same kind, but refused other fluids. These and other speculations, of an equally futile nature, long occupied the minds of physiologists. But more accurate researches into the structure of glands have shown that the pretended continuity of the blood-vessels with the ducts does not exist, and that the latter tubes are invariably closed at their extremities. This fact at once removes the foundation on which those speculations had been raised. It proves that the fluids can pass from the vessels into the ducts, only by transudation through their coats; and, if it does not explain the cause of their different qualities, it may still be said to bring us nearer to the truth, by exposing a fruitful source of error.

General anatomy is also that department of science, which is, perhaps, most directly connected with pathology, or the study of disease. As every texture of the body possesses characteristic properties, which it retains, under certain modifications, in all the diversified organs in which it is found, so its diseased affections are marked by certain common characters, in whatever organ it happens to be affected. Thus, the lining membrane of the bowels, and that of the lungs, both belong to one class, named mucous membranes, and when inflammation attacks them, although it is modified in its symptoms by the different functions of the organs affected, it nevertheless presents important characters which are common to it in both situations, and which differ widely from those that distinguish inflammation of the membranes investing these organs on the outside, which belong to a different class. In this way the anatomy of the textures aids the pathologist in discriminating affections that are different, and generalizing those that agree,—most important steps towards the rational classification and treatment of diseases.

Moreover, diseased vital processes, like the healthy, take place in the intimate texture of parts. Inflammation, for example, has its immediate seat in the minute or capillary blood vessels. Diseased growths, also, as regards their origin, progress, and essential structure, can be successfully investigated by him only who is conversant with the healthy texture; and it is pleasing to reflect that the recent progress of the anatomy of texture, joined with the philosophical spirit which is now extending itself to pathological enquiry, promises to lead to highly important results in this difficult path of investigation. This department of anatomy, it may be observed, has been greatly advanced by the judicious use of the microscope. It has been, no doubt, objected to microscopic observations, that they are peculiarly liable to fallacy; but this objection can apply only to cases in which very high magnifying powers are employed, and such are seldom required. It may be remarked, moreover, that no method of enquiry is totally exempt from fallacy, which can be guarded against only by skill and experience on the part of the observer. The eye itself, though infinitely surpassing all instruments of human construction, is liable to deceive us, and our vision requires to be aided and corrected by experience, and by the information derived from the other senses. In short, the objections to the use of the microscope are as nothing in the scale, when weighed against its advantages. It was by examining the transparent parts of living animals with the microscope, that MALPIGHI discovered the capillary blood-vessels, and observed the blood passing along them,—a discovery, without which that of the circulation could not be regarded as altogether complete.

The body of man is undoubtedly the most important object of anatomical and physiological research; but such studies are not confined in their application to man alone. They have been extended to all living beings. Hence the division of anatomy and physiology into *human*, as applied to man,—*comparative*, as applied to the inferior animals,—and *vegetable*, as applied to plants.

The structure and functions of man are our immediate objects: but, in elucidating these, it is often of the greatest advantage to have recourse to the anatomy of the lower animals. As, however, comparative anatomy will be introduced only as an auxiliary science, I need need not enlarge on the intrinsic merits of this engaging study, on the endless variety of objects which it affords to stimulate rational curiosity, or the profound and extended views of organized nature which it presents to the philosophic inquirer. It will be sufficient here to point out its relation to our immediate studies.

The organs of man and those of the inferior animals are formed on the same general plan. They agree in essential circumstances of structure, though they be more or less modified in each species, to suit its peculiar mode of existence. For this reason it often happens that parts of the human body which are so minutely or intricately constructed as to be exceedingly difficult of investigation, are presented to us of larger size, or more conspicuous texture, in the lower animals. It is obvious that in such cases the investigation of these parts in man must be greatly facilitated by previously examining them in other animals, where their texture is unravelled and magnified to us by nature, and where we are enabled, as it were, to read the same truth in a larger type.

Nothing can better illustrate the truth of this position than the case of the secreting glands. These organs, as I have already

had occasion to state, consist essentially of tubes, or ducts, variously branched or convoluted, with minute blood-vessels ramified upon them. Now, in the human body, some of the glands have the branches of their ducts so small, so intricately involved, or so densely united together, that it would be an extremely difficult, if not a fruitless task, to investigate their structure without calling in the aid of comparative anatomy. As a preliminary step, therefore, we examine these ducts in those animals in which they are larger in size, more simple in arrangement, and more loosely connected.

The anatomy of the lower animals, which is thus so eminently calculated to further the progress of human anatomy, is indispensable to the study of physiology, on which it may indeed be said to throw a flood of light. By tracing an organ through a series of animals, from its complex condition in man to the simplicity which it presents in creatures low in the scale, we discover what circumstances in its structure are essential for the performance of its most general and fundamental function; and by observing its modifications in different species, and the peculiarities of function with which they are connected, we are enabled to determine the special use of those accessory or superadded parts which contribute to its perfection. The organs of respiration and of hearing are instances of this, and many others will present themselves for the progress of these lectures.

A single example may be adduced here, to show the advantage of instituting a comparison between different animals when it is desired to determine the use of any peculiar structure. The abdominal veins of the seal are uncommonly capacious, and form in the region of the liver a large sac, or receptacle, capable of containing a great quantity of blood. From what is known of the aquatic life of the seal, and of the connection which subsists in all warm-blooded animals, between the circulation of the blood and the process of respiration, it might be inferred that these dilatations of the veins were intended to prevent the over-distension of the right cavities of the heart, which would otherwise be liable to happen during the suspension of respiration, which necessarily occurs while the animal is under water. Now, if this explanation be correct, a similar provision ought to be found in other diving animals; and this, on examination, turns out to be the fact. Not only amphibious mammalia, as they are named, but also diving birds, are provided with this structure; and the peculiarity of structure is found to co-exist with the peculiar habit in animals otherwise differing widely from each other, while, conversely, the absence of the structure coincides with the absence of the habit in species which are in other respects closely allied to diving animals. This is strikingly exemplified in water-fowl, which resemble each other generally in structure and mode of life, but some seek their food by diving, and others find it at the surface; in the first, the peculiar provision in the venous system referred to exists; in others, it is wanting. In this manner comparative anatomy is a constant resource to the physiologist; and this truth has been acknowledged and acted on by rational physiologists at all times. Haller, than whom no greater authority can be appealed to on a question of this sort, expresses himself thus:—"The situation, figure, and size of parts, must be learned from the body of man; the knowledge of their uses we owe chiefly to the study of the inferior animals."

The inquiries of the anatomist are not limited to the mature or adult state of the body; he studies likewise the mode in which it is gradually formed or developed. In investigating the construction of a piece of human workmanship, there are two ways by which we might attain our end; we might either analyse and separate it into its different parts, or we might watch the process of its original construction. Each of these methods, it is obvious, would possess advantages peculiar to itself, and the information afforded by the one would serve to corroborate, to amplify, or to correct, that which would be obtained through the other.

A similar plan of investigation is applicable to the animal body. We may either dissect and analyse its organs in their mature condition, or trace their development in the embryo, and the method is here attended with similar advantages. In watching, for example, the development of a complicated organ like the brain, we learn that it first consists of a few fundamental parts, to which others are added, in an invariable order of succession, until the whole is built up and perfected. It is thus discovered that certain parts invariably coincide in the time of their appearance, whilst there are some that appear earlier, others later, but always in the same order. The information thus obtained, leads to a more correct appreciation of the connection of parts, their mutual dependence, and their comparative importance in the economy.

But the great aim of the anatomy of development, is to discover the laws by which that process is regulated; and the study, aided by comparative anatomy, has already partially disclosed some of the great principles which nature follows in the formation of organized beings. I shall here allude only to one of those laws, the knowledge of which has been the means of connecting and explaining numerous facts, which would otherwise have remained isolated and unintelligible. By a reference to comparative anatomy, it is ascertained that any given organ, when traced through a series of animals, becomes more elaborate in its

general structure as it is observed in those that are higher in the scale, the higher conditions of the economy requiring organs of more varied endowments and more complicated structure. Now, the study of development has shown that such an organ in its process of formation in one of the higher animals, passes through a series of transitory states, corresponding in a certain measure with its permanent conditions in beings lower in the scale.

Thus, for instance, the human heart has at first the form of a simple tube, like the corresponding organ in insects and crustaceous animals. It next presents two cavities, as in the fish. In the succeeding form these cavities are subdivided into four, but the partition between the right and left sides is incomplete, so that all the compartments communicate; a condition resembling that which we find in the turtle. Lastly, a complete separation is established between the cavities of the right and left side, and the organ thus acquires its permanent form. This law holds good not only in regard to individual organs, but likewise, though in a more limited degree, to the entire body; and in this sense it seems to have suggested itself to ARISTOTLE and HARVEY, who remarked that animals resemble each other the more, the nearer they are to their origin. The general fact, thus made out by the study of development, has been most happily applied to explain the production of a certain species of malformation to which the human organs are liable, and which seems to be owing merely to the failure of certain steps in their development, in consequence of which they permanently retain their early and imperfect condition.

Thus, in the case of the heart, to which we have already referred, it occasionally happens that this organ is formed of a simple tube; or with two cavities, like that of the fish; or with its four cavities, imperfectly separated, as in the higher orders of reptiles. Such cases are referred to an arrest of development, as it is called, and in this way much of the mystery which once invested these so named *lusus naturæ*, has now been dissipated.

The time I have already occupied precludes any more than a mere allusion to another branch of anatomy, namely, Morbid, or Pathological Anatomy,—a study, which is the surest guide to correct discrimination and rational treatment of diseases, and whose dependence for its successful prosecution on a knowledge of healthy structure I have already had occasion to illustrate.

I have thus endeavoured, however inadequately, to point out to you the several departments of anatomical and physiological knowledge, and to explain their peculiar objects, and their mutual relations. The course of instruction which it is proposed to deliver in this class, will comprehend the anatomy of the viscera, nervous system, and organs of the senses, considered in physiological order; also, general anatomy and physiology. The omission of some of the more elementary topics of descriptive anatomy was deemed advisable, as it will afford time for giving to physiology, and the anatomy of texture and development, a share of attention more commensurate with the extent and importance of these branches than could be otherwise accomplished.

It might have been proper for me here to allude to the facilities for the study of anatomy, which are afforded by an institution like this; but I feel that I have already encroached too far on your patience. I shall, therefore, merely say a few words in reference to one of the advantages which are derived from lectures, as distinguished from the unassisted study of books, as it is of consequence that the student should be aware of the importance of availing himself of it during his attendance.

It has been justly remarked, that as lectures are not intended to supersede the use of books, so they ought, if well conducted, to afford a species of instruction which unaided reading cannot supply. Now, without attempting formally to discuss the respective merits of these two modes of acquiring knowledge, there is, nevertheless, one point of superiority on the side of lectures to which I would here more especially advert, as it applies with peculiar force to lectures on anatomy.

In a book, a student may read the description of visible objects, but at a lecture they are placed before his eyes; and he there acquires a knowledge of them from actual *demonstration*. It is scarcely necessary to remark how immeasurably the one method surpasses the other in fixing the attention on the subject taught, and in conveying clear and lasting impressions to the mind.

To realize this advantage, anatomical lectures must, therefore, be constantly illustrated by dissections and preparations, on which the facts that are spoken of may be at the same time pointed out. As, however, the dissection to be exhibited may often comprehend small or intricate parts, the greatest assistance is derived from the additional illustration of enlarged drawings. On these, the teacher may first point out those facts which he means afterwards to show on the real object, and thus render the actual demonstration more easily followed. Many preparations, again, require close inspection, and even though they be handed round a class-room, still they cannot be seen by the student at the time that the teacher is referring to them. In such cases, an enlarged drawing not only supplies the requisite illustration at the appropriate time, and in a manner conspicuous to all, but it enables the student more easily to under-

stand the preparation when he comes afterwards to examine it. Good delineations, I need scarcely add, are a most useful resource as illustrations, in cases where the real objects are of such a kind as cannot be procured or prepared for exhibition.

The actual demonstration of the objects, aided frequently by illustrative drawings, is then essentially required to render attendance on anatomical lectures profitable to the student; and it is a mode of instruction that may, I am convinced, be advantageously carried much farther than it generally is. The preparation of parts for illustrating lectures is, for the most part, confined to those of which the structure is visible to the naked eye; but, as I have already explained, the principal facts relative to the textures and to organic development can be seen only by means of the microscope, and if the student is to obtain a real, and not a mere verbal knowledge of these finer points of anatomy, an apportunity must be afforded him of inspecting the objects with that instrument. Some microscopic objects which do not need to be highly magnified, may be shown even during lecture; and a time may be set apart for demonstrating those which require a higher magnifying power, or nicer manipulation. An opportunity is thus afforded of practising the student in the use of the microscope, with which, in the present state of the science, no accomplished anatomist ought to be wholly unacquainted.

But, Gentlemen, I hasten to a close. I feel how much my efforts have fallen short of the occasion, how far they have been below what an enlightened audience, like the present, was entitled to require of me; and, permit me to say, Gentlemen, I trust yet, in due time, to prove, that they have not altogether done justice to myself.

I trust, however, that, from the slight sketch I have laid before you of anatomical and physiological study, imperfect as it has been, you will have been able to form some idea, at least, of the nature of our future duties. The fulfilment of these duties will require, on your part, all that love of knowledge, all that persevering diligence, and that desire to excel, which have hitherto been so abundantly displayed by the pupils of this institution. On my part, Gentlemen, I am sensible how much you have a right to claim of me, but yours are claims that must be met, not by words, but by deeds; and all I shall say on the present occasion is, that no effort of mine shall be wanting, no labours shall be spared, which can tend to forward your instruction.

ADDRESS

INTRODUCTORY TO A COURSE OF LECTURES

ON SURGERY,

DELIVERED ON MONDAY, OCT. 3, 1836,

BY MR. LAWRENCE,

AT ST. BARTHOLOMEW'S HOSPITAL.

In the course of lectures, Gentlemen, which I commence this evening, I shall endeavour to instruct you in the science and practice of *surgery*, using that word in its most extended acceptation, as including a knowledge of the nature and treatment of all the diseases which custom has assigned to the care of the surgeon, whether they arise from injury, and other external agents, or from internal causes,—whether they are to be treated by external means, by changing the diet, or other habits, or by internal remedies. I say, the diseases which custom has assigned to the care of the surgeon, because, although the separation of physic and surgery is, in many instances, convenient, and, in many respects, of public utility, the distinction is arbitrary, and altogether dependent on usage. The scientific principles are common to the two branches of the profession; the practical proceedings are entirely alike, and the mode of study is the same. The distinction, even in practice, is so vague, that whether a patient should be attended by a physician or a surgeon depends, in many instances, not on the nature of the disease, nor on that of the means which are to be employed in its cure, but on the opinion which the patient may happen to entertain of the talent, the knowledge, and the integrity of a particular individual. It is a question of confidence, not of nosology. I must, therefore, express my entire concurrence in what was stated by my great predecessor in this chair, viz., that surgery and physic, considered as subjects of study and scientific investigation, are one and indivisible.

In attempting to convey to you the notion I entertain of the nature and extent of surgery, and the distinction between that and the other branches of the medical profession, I must first beg of you to discard from your minds the limited, and, I may say, the unworthy, notion that might arise, if you considered the etymological import of the word. The Greek words *cheirergon* and *cheirourgos*, and the Latin word *chirurgia*, and the English words *surgeon* and *chirurgeon*, are the same expressions, modified according to the genius of different languages. The Greek terms which are used are derived from *cheir the hand*, and *ergon, a work*. Thus, "surgeon" literally means *work of the hand*, and "surgery" means *manual operations*. Surgery, considered thus etymologically, might be defined, "That part of treatment, or thera-

peutics, which consists of manual operations;" but it certainly creates more work for the head than the hand. Now, certainly, a surgeon very frequently employs the hand, but he finds much more serious work for the head. If surgery had been what the name implies, a merely mechanical object, a species of handicraft, the genius of HUNTER would not have been required to spread and to unfold its principles; and such names as those of POTT, ABERNETHY, DESSAULT, BICHAT, RICHTER, and SCARPA, would not have delighted in its cultivation and illustration.

Surgery is one branch of the medical profession: let us enquire in what it consists. To preserve health, to remedy injury, to cure or to alleviate disease, and to apply the knowledge that we possess on this subject to the elucidation of various important questions in legislation, in jurisprudence, in criminal proceedings, in police, and in other matters relating to the health and comfort of individuals and societies, are the objects of a comprehensive science, which we may designate by the general name of *medicine*. The science of medicine, considered thus generally, embraces the natural history of man, the enquiry into the organization of the human frame, and into its living actions. It surveys the human body under the various modifications which are impressed on it by surrounding influences of all kinds. It studies the nature and mode of action of these influences, and hence it derives the rules for preserving health, for alleviating or removing disease. The practical application of these rules constitutes the art of medicine,—the "art of healing," as it is frequently called, but, as it ought more properly to be termed, "the art *of treating disease*;" while the collection of facts, and the reasonings on which the practical proceedings are grounded, constitutes the science of medicine. Now, although medicine, as thus explained, is one subject, and although all the parts are connected by numerous and intimate relations, the field which it embraces is far too extensive to allow of its being cultivated by one individual, either for the purpose of writing or teaching; and it has been found convenient for practical purposes, in many instances, to subdivide the art into particular branches. Hence have arisen the separate callings of *physician*, *surgeon*, and *apothecary*; and hence the distinction of *physic* and *surgery* has arisen naturally, in the progress of society, like other divisions of labour. It accords with the notion generally entertained, and well-founded, that the confinement of talent to one object is attended with an increase of skill and perception. This is true with respect to those parts of our own profession which are of a mechanical kind, and this distinctly prevails wherever medicine has been cultivated as a science. Surgery, then, is one portion or division of medicine.

Considering the distinction between surgery and the other parts of medical art and science to be entirely arbitrary, I use the word in its common acceptation. I conceive it to include the following injuries of all kinds:—The greater part, if not the whole, of external and local diseases; those internal diseases which produce a change recognizable externally,—for example, alterations of position, of bulk, of figure, of consistence; and all cases requiring operations, external applications, and manual proceedings of all kinds. Now, these are the subjects which are ordinarily comprised in a course of lectures, or in treatises, on surgery. Thus, we see that surgery embraces a large portion of the science and art which relates to disease. If we divide the subject under its general name of "medicine" into two parts, *physic* and *surgery*, we shall find that the latter is at least equal in extent and importance to the former.

I do not trouble myself with considering what relation each of the two parts of the medical profession bears to the other in rank: that is a point of fact which involves the opinion of the public, and it cannot, therefore, be determined by the parties interested. I will only observe upon this point, that there seem to be two kinds of rank adjudged—the *artificial*, which is determined by the decrees of the herald's college—the *natural*, which is awarded by the public voice, in the remuneration of public services, not a private one. The criteria respecting the latter in our own profession, depend on the amount of accession to the stock of knowledge and of useful practical improvement. I trust that the surgeon will never be disinclined to enter the lists for the latter species of distinction.

It must be confessed, that in the preceding enumeration of the subject, the boundaries of surgery are not very clearly marked: injuries, accidents, operations,—these are undisputed parts of surgery; but when we come to distinguish between external and internal diseases, the affair is more difficult, and really I cannot pretend to draw the line of demarcation. We need not, however, give ourselves much trouble on the subject, for our patients cut the knot which we are unable to untie. When they are ill they do not look to nosologies, or systems, to see whether they are suffering under a *medical* or a *surgical* disease, they resort to those in whose talent, knowledge, integrity, and professional character, they place the greatest reliance, without considering the distinctions under which they practice, or the fraternity to which they belong. In the great majority of instances, medicine is practised in the country as one profession. Persons are called "*surgeon-apothecaries*." *General practitioner* is the title by which they are now very fitly denominated. On the contrary, in the metropo-

lis, and in many large towns, surgery and physic are exercised by separate practitioners; they are taught by distinct teachers, in separate courses of instruction, and regulations are enjoined by law for two distinct species of the community, the physician and the surgeon, severally governed by the College of Physicians and the College of Surgeons.

Finding this apparent contradiction, we are naturally led to enquire in what the distinctions between physic and surgery consist; whether in the nature of the diseases allotted to each, or the mode of treating them? how and when the distinction arose? whether there is any difference in the mode of learning them?

Nothing like the modern distinction was made by the ancients; we find no traces of it in the Greek, the Roman, and the Arabian writers. Certain branches of practice were, indeed, followed separately in Egypt, where diseases of the teeth, the eyes, and even some internal organs, were attended to exclusively by particular practitioners; and a similar distinction existed in Rome, where dentists and oculists were numerous. But HIPPOCRATES, GALEN, and the Greek medical writers, wrote indifferently on the treatment of fevers,—on external and internal diseases, and operations.

In the long night of ignorance and barbarism which intervened between the downfall of the Roman Empire, and the revival of letters in the West of Europe, learning and science were confined to members of the ecclesiastic profession, to whom we are indebted for the preservation of those imperfect remains of literature and art which we still enjoy. The practice of medicine was confined to them; priests and monks were the physicians and surgeons of those times; they attended to the bodily ailments, as well as to the spiritual wants of their flocks. In the course of time this combination of medical practice with ecclesiastical duties was found objectionable; we may, indeed, fancy that it might be inconvenient to entrust the complaints of females, for instance, to an order of men whose vocation led them to lead a life of celibacy; and the rulers of the church thought it necessary to adopt strong measures, and put a stop to it by a papal edict, in the beginning of the 14th century, in which they were expressly forbidden to practise surgery, under the penalty of excommunication. The manual proceedings thus abandoned by the ecclesiastics, were taken up by barbers, attendants at baths, itinerants, and mountebanks. In the course of time, the care of sores, and some minor processes, came to form, with the art of the barber, the occupation of a particular class of men, who were legally incorporated in this and other countries, under the denomination of "barber-surgeons." This separation of surgery, or one branch of the treatment of disease, from that medical knowledge which is an indispensable guide to the time and mode of its application, survived the circumstances which gave rise to it. It lasted in our own country until the middle of the last century, when the Incorporation of Barber-Surgeons was dissolved by Act of Parliament, in the reign of GEORGE the Second; yet, however, the union still exists in many parts of Europe.

In order to understand whether there is any well-regulated distinction between surgery and physic, it is necessary that I should advert briefly to medical science and practice. When you hear that the human body consists of numerous separate parts, that these exercise distinct offices, and that they are variously acted upon by external causes and internal agents, you might naturally suppose that any of them might be studied separately; that you might learn the nature and diseases of some one or a few organs without studying the rest. A little reflection will show you that knowledge, if it could be thus obtained, would be very imperfect. The individual organs which make up the human body, although various in their structure and office, are all connected with, and naturally dependent on, each other. They are merely subordinate parts of one machine, and they all concur, each in its own way, in producing one common result—the life of the individual. All the leading arrangements are calculated to give a character of unity to the organization and living action of the frame. There is one source of nutrition to the whole body, one centre of circulation, and hence all the parts are mutually dependent for the means of their nutrition and growth, and for the materials for their various exertions, on the alimentary canal and circulating system. There is a common point to which all sensations are conveyed, and from which volition emanates—the seat of the animal propensities, the moral feelings, and the intellectual powers—the source of nervous energy. The nervous system performs the most important offices; it assists the action of the various separate parts, and combines them for the general purposes of the economy. It regulates the combination and succession of movements, and renders them harmonious, so that, although there is a multiplicity and intricacy of parts, they are the same ends, and the machine works silently and imperceptibly. This system is the great instrument of co-operation and sympathy; by means of it, the various parts act together in a state of health, and suffer, or sympathize, in disease. Hence the expression of HIPPOCRATES, in reference to the human body, *labor unus, consentientia omnia*—one exertion, all parts concurring. You can form no adequate notion of one organ, or system of organs, if viewed insulated from the rest, any more than you can understand

the action of a single wheel or lever detached from a watch or a steam-engine. In the same way, when an organ labours under disease, it would be very improper to confine your attention to the local symptoms. You must consider the disturbance which diseased action is capable of exciting in other parts of the body, and the reciprocal influence which other parts may exert over the seat of disease.

Again, although individual organs are numerous, the elements of organic structure are few. The basis of parts is made of the cellular, the vascular, the nervous, and the absorbent systems: the phenomena of life are alike in all their leading features. Hence the changes of structure, and the derangements of function, which constitute disease, are essentially similar, differing only in modification. Since the organic elements, or the materials of the frame, are the same throughout, and since all the various actions are linked together in the execution of a commou purpose, the nature, disease, and treatment, must be everywhere essentially the same. The principles of pathology are the same for all parts of the body, and these, therefore, will be common to the physician and surgeon. There is one anatomy and physiology, and there can be only one pathology. We may therefore assert, that surgery and physic, considered in regard to their principles, are inseparable; they are distinct in practice, but not in science. We may go further, and maintain that no part of science, however limited, can be thoroughly understood, except by one who has studied the structure and living action of the body generally, and who has then cast his view over the whole field of disease.

It is the first object of the medical student to make himself acquainted with the structure of the human body and living action: these are the subjects of anatomy and physiology. He is then prepared for the study of diseases; he watches the circumstances under which they arise; he views their progress and termination, and he explores the organic changes which they produce. He learns to connect these changes with external appropriate signs or symbols, deriving from his comparisons the means of determining the exact seat and nature of disease, and of predicting its course and event. These matters are the subject of morbid or pathological anatomy and pathology. Anatomy is the sign of healthy structure; morbid anatomy of diseased structure. Physiology is occupied with the healthy functions; pathology, with those changes which the functions undergo in disease. The student is now prepared to observe the effects of the various external agents, of outward applications, of inward remedies, or of surgical operations, which are necessary for removing diseases and restoring health. These are the subjects of therapeutics, or the signs of treatment under the three-fold division of hygiene, which includes diet, air, clothing, exercise, and other circumstances of general management; pharmacy and surgery.

Anatomy, physiology, morbid anatomy, pathology, therapeutics—these are the primary divisions of your immediate medical studies, all of which may be referred to one or other of these heads. When disease is studied in this way, in reference to the whole body, it constitutes the science of general pathology, while a similar investigation, directed to a particular organ, is the pathology of that organ.

Now, the real question respecting the distinction of physic and surgery is this;—After surveying the whole field of disease, in the way I have mentioned, can you see any natural division into two parts? Can you divide them into two independent halves, requiring distinct modes of study and practice? Certainly not. The entire structure and functions are universally and intimately connected; no one part is independent of the rest. The causes of unnatural function, and those deviations that constitute disease, are often found, not in the part itself, but in other parts or functions, and the means of treatment are seldom to be applied to the part actually diseased. An example or two will render this truth more obvious. A person is seized with palsy, he is unable to move the arm or leg of one side, forming the disease called *hemiplegia*, or lateral palsy. Now, nothing is found in the paralysed limbs; they are in a natural state, and would be found so by examination on dissection. From the general condition of the patient, we soon find that disease has taken place in the head, and we trace that disease to his mode of living, or to other circumstances which have been in operation for a length of time. The treatment founded on what we have just discovered respecting the causes and primary seat of the malady, is directed to the head: we bleed, we employ cupping, leeches, purging, and change his diet, we employ blisters, setons, and issues, and thus we diminish or remove the paralytic affection, without doing any thing to the paralysed limbs. Many are the local affections in which we can trace no injurious agency on the part diseased. We find an unhealthy condition of some important organ or system, or we trace the derangement in so many parts of the body, that we say the constitution is unhealthy. We find on investigation that these states of the constitution, with their unhealthiness, owe their origin to causes of long continuance, of a slow and almost imperceptible operation. We cannot cure such diseases by merely local means, we must trace the mischief to its source, and apply our remedies there, or we shall never cure the patient. A person is seized with

gout in the toe; the attack comes on frequently in the course of the night, when nothing can have happened to the part. We find in such patients a disturbed state of the circulation, an unnatural fulness of the circulatory system; we find a disturbed condition of the digestive organs, and of the secretions, and we have no hesitation in regarding these as the internal causes of the outward and visible malady. We rectify these disturbances of the circulation, of the digestive organs and secretions, by change of diet and internal remedies, and thus we cure the patient. We thus succeed in restoring the patient to health without making any application to the part which is apparently the immediate seat of disease. The same pathological views which direct our treatment in the cure of a gouty toe, also guide us in the accomplishment of a much more important object—the prevention of future attacks. The state of a constitution which gives rise to gout, is the offspring of luxuriousness and indolence, unless, therefore, in addition to other means we enjoin an alteration in diet and other habits, we shall never accomplish that renovation of the constitutional powers which is implied by the cure of gout, in contradistinction to the mere removal of a gouty attack.

The influence of disease or of injury is not in general confined to the spot which is the immediate seat of suffering; it often extends, and includes so many parts, that, speaking loosely, we say the whole constitution suffers. A disorder of the brain, produced by excessive mental exertion, by intemperance, or by other causes, disturbs the circulation, the digestive organs, and the secretions, and brings a patient into the state called *fever*. Inflammation of a part, from a wound or fracture, in like manner disturbs the circulation, the digestive organs, and the secretions, and in the same way produces fever. Now, how are cases of this kind to be understood, or treated, by those who confine their attention to some one part of the constitution? What are we to think of the distinctions of surgery and physic, when we find that the one case is medical and the other surgical, and particularly when we discover further, that if we were ignorant of the history, and considered merely the general condition of the patient, we should not, in many analogous cases, be able to distinguish the medical from the surgical fever?

Those persons who are inclined to maintain strictly the distinction between physic and surgery, take various views of it, but none will bear close examination. It has been proposed to refer external diseases to the surgeon,—internal to the physician. Unfortunately for this distinction, nature has connected the exterior and interior of the human frame so closely, that it is difficult to say where the one ends and the other begins. She has decreed that both should obey the same pathological laws, and has connected them by mutual influences so numerous, that we cannot engage in the investigation of either without a reference to the other. External diseases in many cases arise from internal causes. I may mention erysipelas, nettle-rash, and the whole tribe of cutaneous affections, even carbuncle, gout, and œdema. In all these cases the external malady is merely a sign or indication of more important internal mischief. In other instances external causes produce internal diseases, as in various catarrhs, rheumatic affections, and in inflammation of the chest and abdomen. Our great reliance in all these cases is on internal treatment—the merely local measures are comparatively unimportant. It is in vain, then, to institute distinct professorships for external and internal pathology, to establish colleges of physicians and surgeons, to call them separate sciences, and direct that they should be practised separately. Lecturers and writers cannot make the distinction, and thus we find, in many instances, that the same diseases are considered by the teachers, both of physic and surgery, comprehended in the writings of both, illustrated by both on the same principles, and treated by the same means.

Some have assigned local diseases to the surgeon, and general diseases to the physician. The idea seems to have prevailed, that the injuries and external affections, which particularly fall under the care of the surgeon, are more especially local, and require more strictly local treatment than internal diseases which come under the care of the physician. Now, though the latter are in many instances obscure, and are, therefore, not so clearly fixed to a definite situation, they are just as local as the former. Surgeons have been too much in the habit of relying on local treatment, and thus have themselves sanctioned this erroneous notion. I remember the time myself, when the surgeons of this hospital would go round the wards, and see a hundred or more patients, and not prescribe a single internal remedy. If the patient's bowels were confined, the sister, or nurse, would administer a dose of purging mixture, or electuary. If anything beyond this were necessary, the case was referred to a physician. This ingenious mode of employing two persons to do the business of one, has passed into disuse, and I apprehend that there are none of us so warmly the admirers of the wisdom of our ancestors, as to wish it to be revived.

Diseases, however, cannot be divided into local and general. There are hardly any in which we do not find it necessary to direct our attention beyond the part, if we consider the cause, the progress, the termination of the disease, and the object of

the treatment; while there are, I believe, really none that strictly deserve the name of *general*. When a part of little consequence in the animal economy is slightly diseased, no striking effect may be produced beyond the part itself; but when an important organ is seriously disordered, many other parts feel the influence, and hence arise what are called *general diseases*. The difference, therefore, between what we call *local* and *general* disease is in degree, not in kind; it is a mere difference of more or less. If we were to arrange all diseases in one column, beginning with the most local, and ending with the most general, we might fill the interval with others which would form an insensible transition between the two extremes. Where could we strike the line across in order to make the distinction between physic and surgery, by an arrangement of diseases constructed in this way? Many are the affections which are local during one part of their existence, and general in another. A person receives a slight cut, scratch, or puncture on the hand; it produces a little redness; this may, perhaps, be neglected, the inflammation extends upwards to the arm, and produces general fever. A female has a lump in the breast, which remains for years without pain or inconvenience of any kind whatever; after a time, it increases in size, it becomes painful, the whole constitution suffers, and disease is produced in many other organs of the body.

Reverting to the nature and extent of the duties which originally constituted the occupation of the surgeon, under the etymological import of the term, some have proposed to confine surgery to the cases in which operations, or other manual treatment, are required. Thus, it has been represented as the province of the surgeon to administer to external ailments, and among his duties has been included a very important negative—that of prescribing no internal remedy whatever! This most important professional distinction would rest, not on any essential difference in the causes or nature of disease, or in the principles of treatment, but on the accidental and often varying circumstances of the means by which those principles are to be carried into effect. What are we to do with the numerous cases, such as inflammatory affections of the head, various gouty and rheumatic disorders, in which changes of diet and internal administrations are necessary, in conjunction with topical applications, and with the surgical proceedings of venesection, cupping, leeching, blistering, and setons? How are we to dispose of these affections in which those various means become necessary in conjunction or succession, as in retention of urine, in strangulated hernia? In the latter a series of manual proceedings, with external applications and internal remedies, employed either together or in succession, is often followed by a surgical operation.

Considering the subject *historically*, we cannot deny that surgery originally consisted of those limited mechanical and subordinate departments which were exercised under the direction, and with the permission, of the physician. Such was the feeble infancy of our profession, in which we can discern no traces of the vigour and efficiency which characterize its maturity. To carry back surgery to this state of impotency and subjection, would be impossible; for we cannot arrest the onward march of knowledge. The attempt would be about as hopeless as that of trying to persuade a man to put on again the leading-strings of infancy. Surgeons have, for a long time, cultivated with ardour and success the scientific foundations of the general profession. They can appeal to the rapid progress which surgery has made during the last half-century, and to the present undiminished reign of its progression, in proof that their claims on the good opinion and confidence of the public are not inferior to those of any other branch of the profession. They can point out, in medical annals, the names of men who stand foremost in the rank of contributors to medical knowledge. Among these, I may mention that of the illustrious Pott, who was for a long series of years a surgeon in this hospital. He has always been justly regarded, both in other countries and in this, as one of the great modern improvers of surgery. His works describe, in clear and elegant language, and with sound judgment, the results of his own observations, and are still perused with instruction and pleasure. They contain a luminous exposition of doctrine and practice on many important parts of surgery. He, however, is thrown into the shade by the more powerful genius, and the extraordinary achievements, of his cotemporary and rival, John Hunter, the greatest man whom this country has produced in medical science, (*cheers*) without excepting even the immortal discoverer of the circulation—the greatest man in the combined character of physiologist and surgeon, that the whole annals of medicine can present. No other individual, either in ancient or modern times, has attempted—to say nothing of performing—so extensive a range of investigations. He examined minutely the structure and function of the human body; he enquired into the organization and living action of animals in all their varieties, extending his researches into the vegetable kingdom as being endowed with life, though in an inferior degree. He observed the phenomena, and he traced the effects of disease in all organs and structures. He brought together the lights issuing from these various sources, and threw them in full force on one great object—the

art and science of surgery. Such was his conception of the nature of our profession, and the means by which it ought to be cultivated and improved. Many have advanced the art, but John Hunter gave a new form to the science of surgery. The physiological principles of our profession, previously uninvestigated or unknown, were created, or at least brought to light, by his genius. Thus, he stands pre-eminent, both among ancients and moderns, for original research and striking discoveries in the principles of medical science. This, however, is not the whole of his claim to the admiration and gratitude of his countrymen. He conceived the grand design of examining by dissection and experiment the structure and living action of animals throughout the whole range of creation. That he had proceeded far in the accomplishment of this Herculean undertaking, is rendered clear by the writings he has left behind, both printed and in manuscript, and by the unquestionable testimony of his museum. That part of the latter which is called the "physiological" series, embraces all structures and organs, and it is arranged in each subdivision, in an ascending scale, from the most simple to the most complex. It is, therefore, an epitome of general anatomy and physiology, an exhibition of the philosophy of life, and discloses the ground on which all divisions in natural history must be founded, affording the basis of scientific zoology. This collection is not only the pride and boast of the College of Surgeons, to whose care it has been judiciously confided by the legislature as a distinguished ornament to the metropolis, but the internal treasure is so completely unrivalled, that it exalts over the whole world the scientific character of the country which gave birth to its author. In estimating the public services of such a man as John Hunter, we are not to regard merely the direct accessions to knowledge which flowed from his individual exertions, but we must consider the influence he exerted on the minds of those around him, the effect of his writings, and example in encouraging others to enter on the delightful paths of science which he laid open to view. Hence new eras in the progress of intellect are derived from the life of such a man. The lectures and writings of John Hunter produced a powerful effect on the kindred genius of his own countryman—I mean the founder of this School, Mr. Abernethy (*Applause*)—to whom we may justly ascribe the great merit of having, by his lectures and writings, excited and exemplified a more scientific investigation of the treatment of surgical cases. He learned from Mr. Hunter, of whom he was a devoted admirer, to bring the light of physiology to bear on surgery, because he was one of the first in this country to vindicate the natural rank of surgery as a branch of general pathology. He taught us to extend our views beyond the narrow limits of local causes and treatment; he pointed out the more general influence to which the diseases of parts owe their origin; and hence he deduced the general modes of treating those diseases. He saw clearly that there is only one kind of pathology, that there is no distinction in the source, nature, and treatment, between surgical and medical diseasse, and, consequently, that the treatment of surgical affections requires all the aid of general pathology and therapeutics. He has hence been sometimes regarded as an intruder on the territory of physic, and he has been accused of wishing to make the surgeon a physician. If it be intended to charge him with wishing that we should add to our surgical knowledge that of medicine, the accusation is just, and, in my opinion, does him the greatest honour. By thus exciting surgeons to the study of medical science generally, he has, at the same time, conferred a great benefit on the public, and added to the respectability of our own profession.

Fellow labourers in the same cause have not been wanting in France, Italy, and Germany. It is sufficient for me to mention Jean Louis Petit, of the French Academy of Surgeons; Dessault, Richter, Bichat, and Scarpa. The two latter have been most conspicuous among the cultivators of anatomy and physiology since the time of Hunter.

Here allow me to digress for a moment, and direct your attention to the mode by which these great men have signalized themselves, by which they have achieved those important public services which have conferred on them imperishable renown. They have been called men of *genius*, but they might more properly be denominated men of *industry*. They may have possessed superior natural endowments, but they have surpassed the rest of mankind more remarkably in industry, activity, and persevering labour. We should have supposed that Mr. Hunter's time must have been entirely occupied by his physiological researches and private practice, but he has left behind him a museum which can hardly, in point of mechanical labour, be considered the product of one man. The writings of Bichat are not more remarkable for the ingenious views they disclose than for the immense extent of anatomical and physiological research they embrace into all parts of the animal structure on which they are grounded, and yet he died at the age of 30. It is in the power of us all to imitate these great men in their judicious employment of time, that *stuff* of which life is made up. There is none of us, however humble our talent, who may not signalize himself by similar exertions, who may not make some addition to the stock of knowledge by dint of close application and patient research.

The attempt to reduce surgery to its ancient limits, to the art of bleeding and tooth-drawing, which constituted the venerable encyclopædia at the time of the barber-surgeons, comes too late by a century or two, and if it could succeed it would be no less detrimental to the public than dishonourable to our profession. In those more serious cases in which local injury or disease is attended with more or less general derangement, such as in compound fracture attended with fever, in injuries of the head, and of the nervous system, in erysipelas supervening on local injury or disease, in retention of urine, in strangulated herniæ, it is obviously the interest of a patient to be attended by a person who understands the case in all its branches. The surgeon who knows only the local, and the physician who understands only the general treatment, are each but half informed, and the two together deserve less confidence than one who understands the entire case. The confidence which ignorant persons are disposed to place on what they call a *combination* of talent is fallacious, if that combination is to consist of a surgeon who knows nothing of the general, and a physician who understands nothing of the local management. In most of these cases the local means are of little consequence, while the fate of the patient depends upon general measures, so that the surgeon who is ignorant of the latter is incompetent to his profession.

Allow me to embrace this opportunity of observing, that the mere performance of operations is the least important part of the surgeon's duty, even in cases which require them. To judge whether a disease is curable by other means, to see when an operation becomes advisable, and to determine when it is necessary, to prepare the patient before-hand, and to manage him well afterwards, are points of equal, and often of much superior importance. Do not understand by this that I mean to speak lightly of operations. On the contrary, it is necessary that you should carefully cultivate that part of your profession; but I wish to warn you against assiguing the first degree of importance to a branch of surgery which you will seldom be called upon to execute. It is a mistake to suppose that, under any circumstances, a surgeon is principally employed in operating. The great boast at the present day is, that the number of operations has greatly diminished. I am confident, comparing the present time with what took place when I entered the profession, that there are not so many operations performed now as there were then, by one-half or two-thirds, and the difference has arisen from the improved knowledge of the nature and treatment of diseases, resulting from the anatomical, pathological, and physiological researches of surgeons. (*Applause.*) At the period I allude to, the removal of the testicle and the female breast, and the amputation of limbs for diseases of the joints, were operations of constant occurrence, whereas they are now comparatively rare. Prepare yourselves, however, by careful study, for the performance of operations; learn to execute them, at all events effectually and safely, and, if possible, dexterously and quickly; but do not take pleasure in making an operative display. Remember the just and humane sentiment of Mr. Hunter:—"An operation by which we mutilate a patient whom we cannot cure, is a confession of the imperfection of our art."

We are now prepared to answer the question respecting the mode of learning. The obvious inference from the remarks I have presented to your consideration is, that the education of a physician and a surgeon must be essentially the same. Anatomy and physiology, morbid anatomy, and pathology, must be studied by both. An acquaintance with the general principles of treatment or therapeutics, is equally necessary in both instances. The principal difference is, that to these common branches of knowledge the surgeon must add the acquisition of the manual and operative part of the profession. He must study medicine generally, as the physician does, and he must, moreover, qualify himself for duties which are strictly surgical. The object of the remarks which I have now been making refers to the study, and not to the practice, of our profession; and my particular design is to impress on your minds the propriety, or rather the necessity, of studying medicine generally. The various parts elucidate each other so materially, that he who confines his attention to one, cannot understand even that properly. I do not intend, by any means, that every member of the profession should practice all parts. I am well aware that the field of medicine is too extensive for one person to cultivate the whole. With a view to further improvement, there can be no doubt that an individual who has received a general medical education may improve a particular department, if his attention be entirely devoted to it. Thus, circumstances of taste, of confidence, age, and station, may lead to some divisions of practice, with advantage to the public, and benefit to science. This is a point, however, which must depend on the particular views and tastes of individuals, and, in some respects, on the notions of patients, who are disposed to have a voice in such a case.

In pointing out to you the course you are to pursue in your medical studies, I must first direct your attention to anatomy and physiology; for a knowledge of the structure and functions of the human body is the basis of all rational medicine. Doctrines, systems, and theories which will not bear examination by these lights, are only to be regarded as random guess-work, or idle

dreams. No one would attempt to repair a clock or watch, or any piece of machinery, unless he understood its construction, unless he knew what we may call its anatomy and physiology, that is, the materials which compose it, and the configuration, adjustment, motion, and action of the various parts; yet you constantly meet with persons who attempt to rectify the disorders of the human frame, not only with an imperfect idea of its construction, but almost an absolute ignorance of it. No person who aspires to a scientific knowledge of the profession should neglect the sciences of anatomy and physiology, because they afford the foundation and criteria of all medical doctrines.

But a correct anatomical knowledge is more especially necessary to the surgeon in the execution of his ordinary duties; without it he cannot determine the seat of disease; he cannot distinguish between affections of contiguous parts; he cannot understand the form, nature, and appropriate treatment of injuries, such as fractures, dislocations, wounds of blood-vessels, and other soft parts; nor can he proceed to perform the operations of surgery without danger to his patient, and equal risk to his own reputation. If you enquire how much knowledge of anatomy is necessary to the surgeon, the answer is short—as much as he can get. But the study of anatomy must be general—it must embrace all parts of the body; unless you know of any part which is out of the reach of accident, and exempt from attacks of disease,—any organ which can never be the subject of operation.

I trust, Gentlemen, you will never be anxious to discover with how small a share of scientific knowledge you may be able to carry on the *trade* of surgery. Your more honourable aim will be to make yourselves accurate anatomists, as a first step towards becoming good surgeons. The health, the lives, the limbs of our fellow-creatures, are entrusted to our care, with a confidence in our knowledge, skill, and humanity; and our utmost exertions, our most anxious toil after knowledge, will not do more than enable us to undertake this responsibility. What kind of feeling, what conscience can that man possess, who can plunge an instrument into the human body without knowing what he may divide or injure,—who will undertake to perform surgical operations without that full and accurate knowledge of anatomy which will enable him to meet every emergency? How could he bear his own feelings if serious deformity, or loss of life, should be the consequence of his ignorance or rashness?

The knowledge of anatomy, however, will not make you acquainted with disease; you may understand the structure and functions of a part perfectly, and yet not know its diseases. How are these to be learned? not from lectures or from writings, but by studying the book of nature. You must visit the sick chamber of an hospital, and observe disease for yourselves. Lectures and books are auxiliaries, and often useful ones, but they are of secondary importance compared with the actual observation of disease. To know disease, then, you must see and closely examine patients; you must watch the origin and progress of altered function during life, and you must explore, after death, the changes produced in organization. Here your knowledge of anatomy and physiology will be of essential service to you. How can you appreciate the effects of disease, unless you are acquainted with healthy structure? How can you refer to altered function, or to the symptoms that organic changes produce, especially in internal parts, unless you know the healthy functions? The wards of an hospital are the best school of surgery; and clinical instruction, under competent teachers, is the best mode of learning.

You will perhaps enquire, whether it is necessary to attend lectures and read books before you see patients? I advise you to resort, as early as possible, to nature, to that source from whence the great masters have derived their knowledge, and from which lecturers and writers must draw their information. The facts which are thus presented to your own senses make a stronger impression than any description even by the ablest lecturer or writer, while the knowledge thus gained from nature can always be depended upon, and is never forgotten. Between him who has merely read or heard, and one who has seen, there is the same difference, in point of knowledge, as there is between the person who has merely perused the description of foreign countries, and one who has visited them. When you have begun to observe disease for yourselves, you may resort, with advantage, to lectures and books, which will be of service to teach you how and what to observe; in pointing out what might escape your attention; in elucidating what might be obscure; in rectifying erroneous conclusions; and in impressing the results of observation more strongly on the memory.

Proceeding in natural order, you will first attend to external diseases, and then to those of internal organs. In the former the origin, the progress, the termination of disease, and the effects of treatment, are obvious to the senses. Here the evidence is before you, and you must apply the principles you derive from that source, by analogy and deduction, to the more obscure affections of internal organs. Hence, a physician should begin by studying surgery; and he who has made himself a good surgeon, has done much towards becoming a good physician. But do not understand that I mean to represent that the study of surgery, in the ordinary accept-

ation of the term, will enable you to practise physic. The internal diseases, a knowledge of which, and of their treatment, constitute together the duties of a physician, are a more arduous branch of the profession; they require greater attention, and you should study them in all possible cases.

I should not recommend you, in the outset of surgical study, to trouble yourselves much with reading books. For the mere beginner, it will be sufficient, perhaps, to make use of the elementary works of Mr. Samuel Cooper, I mean, his "First Lines on the Practice of Surgery," and his "Surgical Dictionary." The latter book is almost a surgical library in itself, and its numerous references will show you the source to which you may apply for further information on various points. To these you may soon add the works of Mr. Pott, and those of Mr. Abernethy, especially his work on the "Constitutional Origin, and Treatment of Local Diseases;" the work of Dr. Hamilton on the "Administration of Purgative Medicines;" and, when some knowledge has been gained in your profession, the works of Mr. Hunter may be reverted to; they are not suited, however, to the beginner. To a person who wishes to possess a thorough scientific knowledge of his profession, an acquaintance with the Latin, French, and German languages is necessary, on account of the numerous valuable facts which are to be found in those languages. I would, however, in respect to the subject of books, again urge the advice already given, of consulting the great volume of nature. *Jurat integris accelerare rivis.* The draught of the pure spring will be always refreshing and invigorating. Seeing and examining disease, observing the effects of treatment, reflecting on the facts thus presented to your own senses, and thereby appropriating knowledge by your own mental exertions, will be a much more useful, as well as a more interesting, employment than reading.

You will understand from the observations that I have now had the honour of addressing to you, that, in selecting the medical profession, you have set yourselves no very easy task. The most comprehensive mind, and the greatest industry, would find occupation for many years in acquiring the whole circle of medical science. You will have occasion to lament that you cannot devote a longer time to those preliminary studies which are necessary as a preparation for the active duties of your profession, and you will see the necessity of improving, with the utmost diligence, those opportunities of gaining improvement which you now possess, and which you will never be able to recall.

Let me observe at the same time, that among all the various objects which can engage the human mind, there is no better exercise of the intellectual faculties, no more attractive and interesting pursuit, than the study of the medical profession, while its practice has the most salutary moral tendency—that of repressing selfishness, and of calling forth and strengthening all the benevolent and social feelings. Our first object is to learn the construction of our own frame, the means by which we live and move and have our being. The nature and operation of those influences by which health is interrupted and restored, by which disease and suffering are averted, are laid open to our observation. Chemistry, natural philosophy, and natural history, are auxiliary sciences more or less directly connected with the immediate objects of our pursuit. Thus we are led to the contemplation and study of nature, and to the investigation of truth. We are not called upon to uphold doctrines or systems, or to defend any particular set of opinions. We have no interests at variance with those of the community. In our professional intercourse with our fellow-creatures, we are known also as the instruments of good in restoring or securing health—the greatest of blessings; the removing or palliating suffering—one of the greatest of evils; in consoling and encouraging our patients and friends; in protracting the approach of that awful moment from which we all shrink back with instinctive dread—the termination of existence. The happiness or misery of life, the very question of life or death, often hangs on our decision. Consider the responsibility attached to those determinations which involve the life of a beloved wife or husband; on which it will depend whether parents shall lose children, or whether children shall sustain the loss of a father or mother!

I trust, Gentlemen, you will enter upon your studies in a frame of mind suited to these serious duties; that you will improve with the utmost diligence every opportunity of gaining that knowledge and experience which will enable you to sustain worthily these great, these responsible duties. You will thus render yourselves respected members of an honourable profession, and you will prepare for yourselves in declining years the first of all blessings, that of looking back on labours devoted to the good of others, the highest of all rewards, that of an approving conscience.

THE LANCET.

London, Saturday, October 8, 1836.

AMONGST the original articles which are published, exclusively, in THE LANCET of the present week, will be found—Reports of

1. The Address which was delivered on Saturday last by Professor A. T. THOMSON, on the re-opening of the London University.
2. The Introductory Lecture to a course on Anatomy and Physiology, delivered by Professor SHARPEY in the same institution.
3. The First Lecture of a course on MEDICAL JURISPRUDENCE, also delivered in the London University.
4. A Lecture introductory to a course on the PHYSIOLOGY OF THE NERVOUS SYSTEM, delivered in the College of France, by Professor MAGENDIE.
5. The Address introductory to a course on Surgery, delivered at St. Bartholomew's Hospital, on Monday evening last, by Mr. LAWRENCE.

The whole of these addresses were delivered at an important epoch in the history of our profession, and one of them by a new candidate for popular favour. In several of these orations, evidence of close and valuable reasoning is observable; but the speech of Mr. LAWRENCE exhibits, unhappily, the baneful effects of the monopoly-and-certificate system which we have so often felt it to be our duty to condemn. It is lamentable to observe that a lecturer possessing the abilities of Mr. LAWRENCE, should be so far unmindful of his duty to the profession, and to the students whom he undertakes to instruct, as to content himself with opening the important school in which he exercises his functions, by repeating an old and worn-out address, which served a similar purpose *on not less than seven or eight previous occasions!* The lecture is not, in point of fact, a *verbatim* repetition of the "Introductory Address" which Mr. LAWRENCE has delivered at St. Bartholomew's Hospital and at the School in Aldersgate-street in former years, for it is, in nearly all respects, an inferior performance, and will be found, on comparison with the address which he delivered at the opening of the School in Aldersgate-street, in the autumn of 1826, an imperfect, slovenly, and spiritless performance. Some of the students appeared to have conjectured what might occur, and were, consequently, engaged, during the lecture in attentively perusing the introductory addresses of Mr. LAWRENCE which were, some years since, printed in this journal; and the young gentlemen who were thus employed appeared to be in no small degree amused by frequently detecting the unfortunate and treacherous wanderings of the lecturer's memory. We would suggest that, on a future occasion, one of the senior students, with a volume of THE LANCET in his hand, might be advantageously engaged to discharge the duties of a *prompter*.

The LECTURES, which we have selected for publication in the two new volumes of THE LANCET for the current year, will consist of

1. A course of lectures, by Professor THOMSON, on MEDICAL JURISPRUDENCE.
2. A course of lectures, by M. MAGENDIE, on the PHYSIOLOGY OF THE NERVOUS SYSTEM.
3. A course of lectures, by Dr. SIGMOND on MATERIA MEDICA and THERAPEUTICS.

The whole of these lectures will be printed in the two volumes of which this week's journal forms No. 3. The manuscript, or the proof-sheets, of these lectures will pass under the revision of the lecturers themselves, previous to publication. The lectures will contain *all the discoveries connected with the subjects to which they relate, up to the hour of their delivery.*

It is almost superfluous to observe, that these volumes will contain the usual quantity of strictures on passing MEDICAL EVENTS; Reports of the treatment of diseases in the public HOSPITALS; Reviews of new MEDICAL WORKS; Reports of the proceedings of MEDICAL SOCIETIES; and Reports of valuable CLINICAL LECTURES; and the importance and interest of the volumes will be further enhanced by placing in the numbers, at short intervals, PORTRAITS, etched on steel, of those medical professors, lecturers, and officers of our public hospitals, who *ought* to be men of distinction, from the distinguished offices which they are enabled

to occupy. The first sketch will be that of ROBERT GRANT, M.D., Professor of Comparative Anatomy in the University of London.

THE lamented death of Madame MALIBRAN DE BERIOT, appears to have caused, if possible, even a stronger sensation among the members of the medical profession than it has produced in the mind of the public generally. Nor can this be regarded as at all extraordinary when the celebrity of the deceased is taken into consideration, and when it is apparent to medical men that the cause of death has been designedly made the subject of doubt and mystery. It is impossible that we can find a place in our columns for one twentieth part of the communications which have reached us, relative to this most unfortunate catastrophe. Although the remarks of our professional correspondents are in strict accordance with the rules of medical etiquette, and all agree in condemning the sudden transference of the patient from one set of practitioners to a single attendant, *without a regular consultation*, nothing has been said by any of the writers, which is of sufficient novelty to warrant its selection for publication. Neither are we in a condition to answer any of the numerous questions which have been proposed to us, respecting the symptoms, because, although we have read all that has been published on the subject, together with three letters from Manchester, we find it impossible to attach a *name* to the malady from the effects of which the enchanting vocalist expired. Some persons charge Dr. BELLUOMINI with great impropriety of conduct in maintaining silence on the subject of Madame MALIBRAN's complaint; but if the behaviour of that physician be blameable in this respect, what are we to say of the conduct of the medical practitioners of Manchester, who seem to have been equally silent, and who appear to be determined not to permit the name or a description of the disease to transpire, or, who, not understanding the nature of the malady, have resolved that the extent of their ignorance shall remain equally secret? The whole of the circumstances connected with this catastrophe appear, to the distant observer, to be of an extraordinary character. The conduct of Dr. BELLUOMINI may be justified by ordinances which he may have sworn to observe in the foreign College at which he received his degree. Nay, he may even think that it is virtuous in him to remain passive, notwithstanding the many importunate questions which the public have submitted to the medical attendants; but the English practitioners who visited Madame MALIBRAN previous to the arrival of Dr. BELLUOMINI, have not the plea of an oath—of collegiate discipline—of law—or of conventional custom, to urge, either as a justification or as an apology for their reserve. Why they remain so obdurately taciturn, is best known to themselves; but we are bound to inform them that their conduct has produced any feeling rather than that of satisfaction in the public mind. They saw the patient *before* the arrival of the Italian doctor. It is said that they prescribed for her, and placed her under the operation of medicine. What, then, is more easy than to describe fully their mode of treatment, and the name of the disease which it was their object to cure? If this description and this name be not given, *fully*, and *immediately*, the CORONER for the district of Manchester will not discharge *his* duty to the public, unless the body be exhumed, and a medical examination of it be made, through his interference.

After bestowing the most deliberate attention upon the whole of the circumstances connected with the illness and the decease of Madame MALIBRAN, we are decidedly of opinion, that unless the English medical practitioners who attended her at Manchester unhesitatingly communicate to the public the name of the disease with which she was afflicted, the particulars of the treatment which they adopted, and the opinion

which they hold as to the cause of her death, the public anxiety ought not to be appeased. Nay, we will go farther, and say, that *the honour of the profession in England* cannot be vindicated, and the cause of public justice sustained, unless the body of the deceased even now be subjected to a medical examination. This is our deliberately-formed conviction.

Since the above remarks were written, a letter has been published in the *Morning Post*, under the title of "Dr. Belluomini's "Explanation of Madame Malibran's Ill-"ness;" but the communication might, with equal propriety, have been published under any other title. To the *professional* reader it offers no explanation whatever, for the doctor has wholly omitted to state the *names* of the medicines which he prescribed, and the *doses* in which they were administered. The most disreputable QUACK in existence could not have adopted a more unsatisfactory course,—could not have dealt more *cautiously* with secret and empirical remedies. Besides, death was caused by a "nervous fever!" If Dr. BELLUOMINI intended to be explicit, he has failed in his object, and we leave him, therefore, either to resume his labours, or to remain silent. If he should not write again, the profession will form their own conclusions, as well form the *omissions* of the doctor, as from his singularly unsatisfactory statements. One valuable effect must, however, be produced by the letter of the foreign physician,—a *bonâ-fide* "explanation" must forthwith come from the *English* practitioners; but we much question whether *any* exposition can now be offered which will supersede the necessity of a pathological examination of the body.

EXPERIENCE for some years past has instructed us to believe, that many of the medical lecturers in this metropolis anticipate, with feelings of dread and apprehension, the publication, at the opening of every annual medical session, of the STUDENTS' NUMBER OF THE LANCET. We are not bold enough to declare that their fears have had no reasonable foundation. A knowledge of their own circumstances and pretensions, or, rather, their *false* pretensions, have undoubtedly furnished them with a prolific source of disquietude. As for ourselves, we have ever tried to discharge our duty in accordance with strict principles of justice. The rod of correction has been generally used by us with too forgiving a disposition; and the punishment of those culprits who have been subjected to our discipline, has always been inflicted rather for the purpose of example than for the gratification of any feelings of animosity or revenge. Still, we have not pleased the delinquents; and, certainly, we are willing to confess that no effort has been made by us with that object. Occasionally we have been provoked to execute full justice on some of the advertising adventurers who have endeavoured to entrap and plunder the students on their *entrée* into this metropolis. But however great may have been the provocation, still, the fulfilment of an important duty has constituted the aim and object of our labours.

In publishing the STUDENTS' NUMBER on the 24th ult., we scrupulously abstained from criticising, by name, the various medical schools, and the persons who were advertised to lecture in them. We refrained from engaging in such a task, under an impression, that however carefully our strictures should be written, we might, nevertheless, approve where approbation was not merited, and condemn where censure was undeserved. In the preface to the Number just named, our views on the subject were explained thus:—

"We shall not attempt to institute any "comparison into the respective merits of "the various establishments or teachers. "The invidious nature of such an under-"taking—the task which such an investiga-"tion must impose—would require nerves of "iron for its execution with strict impar-"tiality; and, at last, great injustice might "be done in criticising the pretensions of "untried men—of new candidates for scho-"lastic honours and renown. We have

"found, by experience, that when censure "is inflicted, the smallest portion is deemed "to be too great, and that when praise is "bestowed, no quantity which can be offer- "ed is too large in amount. There is, on "the one hand, in fact, no satiating the hu- "man appetite for approbation, and, on the "other, no reconciling delinquents or imbe- "ciles to the just reward of their culpability "or folly. Without, therefore, undertaking "an investigation which might mislead both "ourselves and others, with regard to the "merits or the demerits of each teacher in "the various schools, we will at once put "the student on his guard—set his mind on "the *qui vive* against imposition, by mak- "ing him acquainted with the fact, that, "since we have conducted this journal, and "paid any attention to the subject, we have "never witnessed the faithful and *bonâ fide* "fulfilment of the promises, the many agree- "able *promises*, which have been embodied "in any one prospectus of a complete school "of medicine in a single session. The puffs "and pretensions are innumerable, whereas "the claims of the different teachers and es- "tablishments to distinction, where, indeed, "any exist, are easily enumerated. The "whole system of 'TICKETS' and 'CERTIFI- "CATES' is indebted for its origin to the de- "fective constitution of our medical colleges, "but *the system itself*, when in operation, is "the prolific source of *extortion* and *fraud*."

Having thus passed over the lecturers and their schools, without particularizing one of them by a comment, the hospitals next fell under our observation, and we embraced, with pride and satisfaction, the opportunity of directing the attention of medical students to the enlightened *system of government* which has been adopted in the NORTH LONDON HOSPITAL, the institution connected with the London University. The facts relating to this establishment which were deemed worthy of especial notice, were the following:—

The institution of the concours for the office of house surgeon.

The disposal, gratuitously, of the office of dresser on the medallists of the medical classes.

The appropriation of the office of physician's clerk to gentlemen of the same rank and merit.

The establishment of the hospital, avowedly for the purpose of furnishing clinical instruction to students in medicine.

The moderate charge made for attendance, in comparison with the demand at other hospitals, that charge amounting to only twenty-six pounds five shillings for *perpetual attendance* on both the medical and the surgical practice of the institution, embracing also several valuable sets of clinical lectures delivered by the medical officers.

After setting forth these advantages, we concluded our reference to the hospitals in the following words:—"Where is the stu- "dent in whose mind the advancement, the "dignity, and the utility of his profession "form subjects of the slightest considera- "tion, who would fail, *cæteris paribus*, to "show a decided and an unequivocal pre- "ference for the NORTH LONDON HOS- "PITAL?"

Cautiously, then, whether wisely or not, did we abstain from giving any analogical view of the merits or the demerits of the respective *schools* and the *teachers* in them. With regard, however, to the *hospitals*,—establishments which are maintained by funds and subscriptions which are THE PROPERTY OF THE PUBLIC,—we felt ourselves at perfect liberty to give one of those institutions a special notice, and to recommend it with the utmost cordiality to the attention of medical students,—not because the hospital was situated in a particular place; not because the officers in that institution were our private friends,—which they are not; not because we have one farthing of pecuniary interest in the establishment, but because, as we have already stated, several important offices in the establishment are bestowed according to *merit*, and not SOLD FOR MONEY, as in the other hospitals,—because the officers of that institution are men of first-rate professional talent, and discharge their duties, *including the delivery of clinical lectures*, with the most punctual assiduity, and because the fee for "perpetual attend- "ance" on *both the medical and the surgical practice of the institution*, amounts to no more than the charge for *one year's* attendance on *the surgical practice alone* of *Guy's*, *St. Thomas's*, *St. George's*, and several other hospitals. These were the grounds on which a recommendation of the *North London Hospital* was offered to students; and we appeal to parents and guardians, we appeal to the public, we appeal to the profession, and ask,

with confidence, not whether we were justified in bestowing that recommendation, but whether we should not have been guilty of a most culpable neglect of duty,—if we should not have exhibited a cowardly betrayal of the trust which is imposed upon us as independent medical journalists, if we had omitted to point out to pupils the great and peculiar advantages which are offered to them by entering to the medical and surgical practice of the *North London Hospital*.

Was it "dishonest" to extol the system of concours? Was it "false" to allege that the office of House-Surgeon is not sold, as it scandalously *is* sold at *St. Bartholomew's Hospital*? Was it "false" to allege that Drs. ELLIOTSON, A. T. THOMSON, D. D. DAVIS, and CARSWELL, and Messrs. LISTON, S. COOPER, and RICHARD QUAIN, are able, highly-gifted, and *industrious* medical officers? Was it "false" to allege that the clinical lectures at that Hospital are regularly delivered, and, what is of still more consequence, that the addresses of the teachers are richly stored with practical information? Still, prominent as are the advantages offered to a pupil at this hospital, we did not exhibit them as of a superlative character—as superseding all other considerations in the minds of pupils, but merely recommended that institution in words which we will here re-quote:—

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At best, therefore, this was only a qualified recommendation of the hospital,—the hospital was only to have a preference if *all other* circumstances connected with the attendance appeared to weigh with equal force in the mind of the student. Out of this recommendation, however, qualified as it is, the dirty knaves who soil a ream or two of paper weekly for Messrs. LONGMAN and Co., have accused us of dishonest proceedings,—of having cried up a certain set of teachers "with gross partiality." "The object," the HIRELINGS remark, "is to represent the schoo "of University College in Gower-street as by "far the cheapest in London, and the mode "of effecting this is, by taking the North "London Hospital and setting it in the fore-"ground of the school to which it belongs." Although, be it observed, after pointing out the peculiar and marked advantages of the hospital, we merely recommended the student to show a preference *cæteris paribus* for that institution, yet it is alleged by the muddy-brained hirelings in question, that it was our "*object* to represent that the *school* of University College is by far the cheapest in London." Of course, we shall not condescend to reiterate our statements, or re-assert our "object," at the instigation of such a paltry hireling. He, in reality, is beneath contempt, but not so are his masters,—the few remaining "hole-and-corner" PURES who still subscribe their pounds sterling to make up the losses which are regularly sustained by the publishers, through printing and publishing the stupid "*Gazette*." These masters, albeit, are not a whit less doltish or personally insignificant than is their miserable hack, but *they* occupy *offices* of distinction; hence their proceedings are of some consequence. It appears, then, that these personages are stung to the quick by our notice and commendation of the *North London Hospital*. Truly there is a sufficient cause for their agony. At the *North London Hospital* there is no disgusting bidding of *money* by wealthy *Ignorance* for the privilege of torturing the patients, under the title of "Dresser!" There is no shameless open *sale* of the office of *House-Surgeon* in that institution!! No, no. And the fee at that hospital for a perpetual attendance on both the Medical and Surgical Practice amounts to only TWENTY-SIX POUNDS FIVE SHILLINGS. These are the facts which sting the corruptionists, and our announcement of them acted as a virulent poison to their wounded feelings. They know that the whole system of hospital-monopoly, and the extortionate demands made upon students under the operation of the CERTIFICATE CONTRIVANCE, cannot be main-

tained against the noble precedents which the government of the *North London Hospital* so beautifully furnishes. The introduction of the concours for the office of House-Surgeon in that establishment, inflicts upon the sellers of that office in the other hospitals a character for avarice, and a disregard of the merits of industrious and able pupils, which all men claiming the privilege of respectability would be *anxious to shun*.

Until the *North London Hospital* was established, not one pupil, throughout the whole of our experience, had been elevated on the ground of *his merit*, to a single office in any one of our public medical institutions. How FRIGHTFUL IS THIS FACT! Have not the pupils, therefore, reason to hail the new institution as their Temple of *Fame*, and ought they not to regard the officers of that establishment as liberal-minded men, who hold a first place in the ranks of their most zealous and ardent friends? These questions have already received a most satisfactory and substantial answer. The number of students at the new hospital is the largest to be found at any one institution in the metropolis; and, what is more, if the new system of government, that is, if a just and liberal system, be not adopted at the old hospitals, the applications for admission to the privileges of the hospital of the University will soon far exceed the number of those who can be adequately accommodated in one establishment. The names will be entered early in the session for admission, and the privilege of attending will only be attainable by seniority of place on the inscription-roll of the institution. If the medical officers of the other hospitals be annoyed at the preference which is thus shown to the *North London Hospital*, let them at once concede to pupils those privilege, which have mainly contributed to secure that preference. Let them abolish the sale of the office of House-Surgeon,—the sale of the bandage-and-plaster box which is carried round the wards by the dresser. In a word, we call upon them to adopt the concours, and thereby confer both an honourable and a profitable reward on the most meritorious and talented of their pupils. If they persist in turning a deaf ear to our admonitions, they must submit to the punishment which is due to their avarice and perverseness.

In noticing the London Hospitals the hireling of the "Gazette" sneeringly adverts to the "smallness of its size," although if the scribe knows any thing of medical treatment and practice, he must be aware, that in one hundred and twenty beds,—the occupants of which are selected, not out of any false *pretence* of "charity," as in the other establishments, but *avowedly* as patients who are afflicted with diseases which are best calculated to furnish materials for clinical instruction,—he must know that the amount of facts for *observation* and *reflection* always within the walls of the hospital, must invariably be greater than the mind of any student can grasp and control. It may fearlessly be contended that if the *North London Hospital* contained only sixty beds, under its present system of management, considering the talents and industry of the medical officers, the undisguised nature of the practice, the value of the clinical lectures, and the regularity with which those lectures are delivered, it would even then be far more profitably attended by a pupil who is in search of practical information in medicine and surgery, than any other hospital in the metropolis,—even than an establishment which contained not less than five hundred beds. What said Mr. LAWRENCE on the subject of large and small hospitals, *before he pocketed the fees which are connected with the office of House-Surgeon in the Hospital of St. Bartholomew?* The opinions which were formerly expressed by Mr. LAWRENCE, may now prove somewhat perplexing both to himself and his brother corruptionists. The hireling of the "Gazette" is knocked down by one of his own masters. In one of the speeches which Mr. LAWRENCE delivered when he was a professed medical reformer,

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he used the following words, and we quote them from his own printed edition of the speech:—

"In requiring that candidates for the "diploma of the College of Surgeons "should attend a hospital containing *one hun-* "*dred* patients, the college has introduced a "*curious* criterion. *You*, Gentlemen, will "probably think it more important to know "the *description* of cases, and the degree of "knowledge and skill displayed in *treating* "them. The name of SCARPA must be familiar "to the framers of this rule. He has render- "ed great services to our science, although "he never enjoyed the *grand advantage* of "attending winter lectures on anatomy and "surgery by a *London Hospital surgeon!* The "hospital which has enabled him to render "these important services to our science, "contains, I believe, *about twenty beds.* "RICHTER, the contemporary of HALLER, in "the University of Göttingen, celebrated "throughout Europe for his judgment and "practical skill, as well as for the clearness "and good sense of his writings, had an "hospital of *fifteen beds.* The same institu- "tion, now under the care of Professor LAN- "GENBECK, an accomplished anatomist and "very dexterous operator, does not contain "more than *twenty-five beds.* The medical "clinic in the general hospital at Vienna "consisted of two wards, each containing "twelve beds; and that of the illustrious J. "P. FRANK, at Pavia, did not contain more "than *twenty.* The surgical clinic at Vienna "consists of *fourteen beds*, and that for dis- "eases of the eye, of *twenty-four.* Thus, "Gentlemen, the great men whom I have "referred to, consider it most conducive to "the advantage of the student to limit his "attention to *a few cases*, making *each* of "*those a study.*"—*Speeches*, p. 30.

Such is the testimony of Mr. LAWRENCE of the "great" hospital of *St. Bartholomew*, in favour of hospitals which are *not one-fifth of the size of the University Establishment.* Assuredly, if the corruptionists had not entirely lost their senses, they would cease to employ such a fool of an advocate as the hireling of the "Gazette."

The Practical Anatomy and Elementary Physiology of the Nervous System. Designed for the use of Students in the Dissecting-Room. By F. LE GROS CLARK, Demonstrator of Anatomy, &c. London: Longman and Co. 1836. pp. 367.

A GOOD work with this title was much wanted. The combination of physiological and practical remarks, with anatomical description, tends to lessen the tedium of dissection, and also to fix in the mind those precise points of anatomy which are most essential in medical practice. Perplexities and difficulties innumerable attend the study of dry anatomy. Like details in all other branches of enquiry, those of the dissecting-room are quickly forgotten, when no other function of the brain than the memory is called into action during its study. The judicious teacher of anatomy will wisely excite the organs of construction, causality, comparison, order, and marvellousness—we should say. In point of fact, there is no permanent memory but by the action of several organs combined.

Mr. Clark's work is divided into four Parts. Part 1 is in two sections, containing, first, a Description of the Encephalon and its several parts; secondly, the Spinal Cord and its Membranes and Appendages.

Part 2, contains the Physiology of the Nervous System,—not troubling the reader with a history of progressive discoveries, but presenting a satisfactory outline of the functions of its different parts, for the elucidation of its pathological phenomena.

Its principal functions he classes under *Sensation*, *Muscular Action*, and *Assimilation*. The production of animal heat he refers to the latter head. In his physiological remarks, he unravels and classifies the subdivisions of these heads, assigning to each division its alleged functions. Referring sensation and volition to the cerebrum, and assimilation to the great sympathetic, he defines *volition* to be "the power of willing an action,"—the control of the will over those muscles which are under command. *Sensation* he calls "perception through the medium of the senses." 1st, *Common sensation*, with its modification, the sense of touch; 2nd, *Specific sensation*, which comprehends the other *four sense*. These originate in the cerebrum, and, according to Sir Charles Bell, are referable to a portion of the 5th pair, and to the posterior roots of the spinal nerves.

The nerves of *specific sensation* are the first, the second, the portio mollis of the seventh, and either the lingual branch of the fifth, or the glosso-pharyngeal division of the eighth. *Muscular action* and *muscular irritability* are next discussed. The latter Mr. Clark conceives to depend entirely on the presence of nervous matter, contrary to the opinion of some that it is inherent in, and inseparable

from, muscular tissue; but his first position is purely assumptive. He contends that nervous matter is a necessary, an universal, and an inseparable constituent of muscle. That being admitted, of course the consequence is plain.

The different kinds of muscular action, with their centres, are next debated; first, as regards voluntary motion, "the result of cerebral influence communicated by nerves taking their origin from the brain within the skull, or from its prolongation within the spinal canal." This is proved by pathology; total loss of voluntary power invariably attends compression of the brain by bone in fractured skull. The spinal cord also being similarly compressed, total loss of voluntary power below the seat of injury is observed.

An outline of Sir Charles Bell's theory of the respiratory nerves is then followed by a consideration of those muscular actions which are referrable to the sympathetic ganglia. Mr. Clark says,—

"The arguments which favour the supposition that there are certain portions of the muscular system under the control of the sympathetic ganglia, are negative rather than positive, and may be comprised under the following heads:—1st. One division of the nervous system possesses the property of endowing muscles with the power of contracting, subject to volition; voluntary motion ceases when the brain is removed; it is therefore inferred, that the brain is the source of voluntary motion. 2dly. Experiment proves, however, that after such subtraction muscles still possess their tone, and are capable of contracting when certain stimuli are applied, directly or mediately, to the nerves supplying them. These phenomena also cease (with certain exceptions) when the spinal marrow is withdrawn; the inference is, that some portion of the spinal marrow is the axis or centre of excited acts of contraction. 3dly. The exceptions alluded to are the heart and arterial system; the stomach, the small intestines, and the large intestines. The muscular fibres of these organs continue (with certain provisions) to contract with vigour and regularity, after both brain and spinal marrow are removed; or, which amounts to the same thing, after they themselves are separated from the body. 4thly. It may be assumed, if reasoning by analogy be allowed, that the excitability of these muscles is dependent on the presence and influence of nervous matter; and the necessary deductions from the facts above stated is, that this nervous matter has its source neither in the brain nor spinal marrow. 5thly. There are no other nerves remaining, but those originating from the sympathetic ganglia; if, therefore, our premises be correct, the inference is palpable, that the susceptibility of being stimulated to active contraction, possessed by the above-mentioned organs, is a property derived from branches of the sympathetic ganglia distributed to their muscular fibres."

Collateral evidence is adduced to support this negative mode of reasoning. Brachet's work on the "Ganglionic System of Nerves," however, furnishes something more than merely negative proof of the active influence exercised by the sympathetic nerves over the several organs. Brachet, in order to ascertain the power of the sympathetic nerve over the heart's action, placed a double ligature as near as possible to the origin of the left subclavian, in a young dog. Then dividing the artery between the two ligatures, he exposed the cardiac nerves, traced them into the chest, turned back the first rib by disarticulating its sternal extremity, and thus arrived at the cardiac plexus. Isolating this, he carried the scissars into the wound, and divided the plexus. The circulation, which, but an instant before, had gone on perfectly well, was at once arrested, the heart ceased to contract, and the animal became convulsed, and died. Here death was the immediate consequence of the division of the cardiac ganglion. This proof of the power which the sympathetic nerve possesses over the heart's action is direct and positive. This indefatigable physiologist has also endeavoured to prove the existence of the same power of this system over the other "organic functions" by direct experiments.

Mr. Clark next compares the liability to fatigue of the different classes of muscles, and the progressive death of the three divisions of the nervous system. He says—

"It is well known that voluntary muscular action cannot be continued for any length of time, without an interval of rest; so also the respiratory muscles, when acting in obedience to the will, are subject to fatigue; but ordinary respiration and the heart's action continue unceasingly from the cradle to the grave. Nor does the peristaltic action of the alimentary canal enjoy much tranquillity. It is, however, probably an error to suppose that even these organs are totally exempt from the common law by which nature requires that toil should be followed by repose, in order to a renewal of vigour."

This reminds us of a statement which some inventive periodical lately placed in

the mouth of Talleyrand, whose pulse is said to intermit and pause at every sixth beat, and to be pointed at by the great political schemer, as a "rest" of nature, which gives him a vast superiority over other men. All the missing pulsations, he is alleged to say, are added to the sum-total of his life, being found again in future years, for the benefit of his longevity and strength. But the story is spoiled by making him declare, as another quality of the intermission, that it enables him to do without sleep. "Nature," says he, "somnolates and recruits herself at every intermission of my pulse." The gain of time cannot occur at night and in old age too, though the protraction of his years is cited as evidence of the truth of the theory.

Mr. Clark next considers in what order the three divisions of the nervous system cease to exert their influence when life is drawing near its close:—

"In the majority of cases, he says, where the vital powers ebb slowly, the cerebro-spinal centre first relaxes. Volition and sensation are probably extinguished synchronously. Next the excito-motory axis yields, and with it respiration ceases. In the ordinary acceptation of the term, *death* is now complete; the body possesses neither animation nor excitability. But is the influence of the nervous system altogether withdrawn? Facts will answer this question in the negative, and seem to point to the sympathetic as the division which survives the rest."

With respect to the functions of the cerebellum, Mr. Clark offers but few remarks, the opinions entertained on that subject being as yet of a more conjectural character than those on the connection between other portions of the encephalon and their alleged functions.

Part 3 contains the Anatomical Description of the Cerebro-spinal Nerves; and Part 4 the Anatomy and Physiology of the Sympathetic. The nerves derived from the sympathetic ganglia possess the following properties:—

"1. They are the source of the irritability upon which the action of the purely involuntary muscles depends.

"2. They have the organs of secretion under their immediate control, and govern the vessels which carry on the processes of deposition and absorption, and thus direct nutrition, growth, and decay.

"3. They influence the changes of the blood from venous to arterial, and the production of animal heat.

"4. They maintain a sympathy, and ensure a co-operation, between the several parts of the brain."

Our knowledge of the *pathology* of the sympathetic system is very limited. Doubtless, however, in the nervous affections of the abdomen, which are so often met with in practice, the ganglionic system is the seat of the disease. As to hypochondriasis, all the phenomena of the disease clearly prove it to be spasmodic, and merely a *neuralgic* affection of the sympathetic. Melancholy and mania, too, are referred by medical men to the abdominal viscera. The old theory of vapours ascending to the head, or the secretion of black bile, being the cause of these diseases, now gives place to opinions that it is the re-action of the solar plexus, or abdominal brain, on the cephalic brain, which disturbs and perverts its normal functions.

The reader is now acquainted with the most prominent features of this work. Great care and industry have been bestowed on its compilation, and although here and there that *lucidus ordo* which is so necessary in elementary volumes, is absent, and, on some occasions, the author jumps at conclusions without a firm footing for the leap; yet these errors must not deter us from informing students that they will find the work a most useful companion in the dissecting-room. The descriptive part is particularly well executed.

On the Efficacy of Carbonic Acid Gas in the Diseases of Tropical Climates. With Directions for the Treatment of the Acute and Chronic Stages of Dysentery. By JOHN PARKIN.

THIS is a curious specimen of the art of pamphlet-making. Mr. Parkin tells us, that in discussing the probable causes of these tropical complaints, he will follow the distinction usually made by other writers in dividing those causes into *two*, (causes?) viz., the remote and the proximate. From the consideration of the causes he passes on to a "slight review" of the effects of this destructive agent on health and life. We find no necessity for saying more of this production, but we will treat the reader to one sample of the writing:—"Even the often-boasted climate of France, with its smiling vineyards and azure sky, is not more congenial to life than the smoky and dense atmosphere of London; while, compared

with the whole of England, the balance in favour of the latter despised and calumniated city is as 60 to 40." The author's object is to prove the efficacy of carbonic acid in the cure of diseases occasioned by malaria; but the work defies analysis, and is beyond, if not beneath, criticism.

Selections from the "Phrenological Journal." Edited by ROBERT COX. *Edinburgh, Maclachlan and Stewart.* 1836.

THE science of mind has not made an advance from the days of Plato to the birth of Gall, one hundredth part so great as its march from the latter time to that of Vimont and Broussais. The phrenologists have not only put the metaphysicians and the physcologists to the rout, but they have wholly exterminated one party, and destroyed at least one great division of the other. But phrenology, besides destroying physcology, has also, in establishing one system for another, presented mankind with a chart of the mind which the multitude can understand. It is curious, that even if phrenology be not true, a key to human actions has been supplied by the theory of Gall, which enables us to turn their most intricate wards; and men can now reflect upon their own impulses with a degree of clearness and truth which is marvellous. Phrenology has reduced to common comprehensions what was confessedly mysterious even to the subtlest metaphysicians. Who amongst our readers that has perused the acute and searching illustrations of phrenology supplied by M. Broussais in the last volume of THE LANCET, without experiencing, where he was in darkness before, the rushing of a flood of light upon the operations of his mind? Had phrenology but supplied us with its *terms*, and but *imagined* the respective cerebral developments, combined with the theory of Gall, it would have materially relieved mental phenomena from their obscurity. But it has done much more, even if it have not done all that is alleged. Locke foresaw the result of enquiries on this subject. In his "Essay on the Human Understanding" he said, that he could see no reason why moral truths should not be as capable of demonstration as mathematical. Accordingly, the Baconian method of induction has succeeded with the phrenologists, and they have accumulated an immense mass of facts which must be as interesting to the admirers of the sublime doctrines of the imaginative Plato, as they are valuable to the disciples of Gall.

The present little volume will be generally acceptable. It contains a number of very instructive papers. We beg to direct attention more particularly to the "Phrenological Explanation of the Vocal Illusions, commonly called Ventriloquism," by Mr. James Simpson; Dr. A. Coombe's "Remarks on Dr. Thomas's Theory of the Temperaments;" and a highly interesting paper on "The Causes and Cure of Stammering," by Dr. A. Coombe. The author of this paper clearly proves that the real cause of that affection is irregularity in the nervous action of the parts which combine to produce speech,—that irregular action of the brain must be the antecedent of stammering. A review of the *exciting* causes of the infirmity proves this fact:—

First,—It is not unusual for a person who is perfectly fluent in conversation, and who has never before stammered, to become grievously affected with that impediment. The brain, the organ, in mass, of the mind, is irregular in its impulse of the organs of speech, and a conflict results between the *desire* to speak well and the *fear* of speaking ill, or from consciousness of a paucity, or a bad arrangements of the ideas, or a dearth of words. In every instance the *essential* circumstance is a conflict, or the absence of co-operation among the active faculties, necessarily producing a *plurality*, instead of an *unity*, of nervous impulses.

Secondly,—A person who is unexpectedly beset by danger, *stammers* from head to foot, until the restoration of his presence of mind supplies an *unity* of purpose, and enables him to decide upon his course of action.

Thirdly,—The effects of wine and spirituous liquors prove the influence of the brain in the production and cure of stammering. A person who is sad, silent, and spiritless, on being moderately excited by wine, becomes gay, talkative, and witty. If he drink to excess, his mind becomes embarrassed, and his intellects disturbed. The muscles, subjected to the guidance of a will which is without power, contract feebly, and the most marked stammering is the result.

According to this view, the cure of stammering consists in bringing the vocal muscles into harmonious action by *determined* and patient exercise. The opposite emotions,

so generally productive of stammering, may, especially in early life, be gradually subjugated by a judicious moral treatment,—by directing the attention of the child to the existence of these emotions as causes,—by inspiring him with confidence,—by exciting him resolutely to shun attempts at pronunciation when feeling unable to command language,—by employing his tongue, when alone and free from emotion, in talking and reading aloud for long periods of time, so as to habituate the muscles to simultaneous and systematic action.

The volume also contains an excellent article on the Nature and Seat of Hypochondriasis, phrenologically illustrated, by Dr. Coombe.

PHRENOLOGICAL BUSTS.

To the Editor of THE LANCET.

SIR:—Even if those suggestions of Mr. Hytch, in THE LANCET of Sept. 24th, which are practicable were adopted, I am of opinion that they would neither be likely to extend the science of phrenology, nor aid the researches of young beginners. Nature has not shown by marks the exact boundaries of each organ in the head, any more than in other parts of the body; but that does not impede observers, who soon learn to distinguish the situation, shape, and size, of the several organs. It is only when more fully developed than the surrounding organs, that any organ is prominent, and when several organs situated together are large, not separate prominences but a general fulness in that part of the head is observable. To construct a bust, therefore, which shall represent every organ prominent, would be to exhibit that which never can be seen in the human head. The busts at present show the head as it would appear were all the organs equally developed.

To designate the marked bust as the "principal tool" of phrenologists, is to call it by a name which no phrenologist ever gave it, for marked busts are but the means of elementary instruction, and if "tool" be an apt designation for any thing which is the subject of our observations,—if the earth be the "tool" of geologists, and the human body the "tool" of anatomists, then the human head, and not a bust, is the "tool of the phrenologists." In reply to the assertion that the existing busts are unfitted for the purposes designed by their constructors, I would ask, What were those purposes? Not to denote the exact size of an organ on examining a head, as Mr. Hytch seems to think, but to mark its situation, and so much of the external shape as can be portrayed. Experience shows that it is calculated to do this. All beyond it must be left to the observation of nature.

Busts are at present made of all sizes, some being smaller than a child's head, others as large as an adult's; but the former are in general use, being most convenient, and quite large enough. Mr. Hytch says, that the majority of busts vary from each other. It is true that a slight difference exists between those which were made some years since and those now made, not in situation, for that has always remained the same, but in forms, which alterations extended observations have enabled phrenologists to make. Phrenology is matured by observation, and corrections must be made when experience demonstrates the necessity.

The organs above the eyebrows are naturally small, and I do not see how a larger bust than that in general use would enable observers to distinguish them more easily. The method for students to adopt, after becoming acquainted with the situation of the organs, is to examine casts of heads whose character and development he has obtained. This will soon enable him to distinguish the size of each organ, and then he may proceed to examine the heads of living persons. But beginners ought to make it an invariable rule to observe manifestation previous to development.

With the concluding paragraph of Mr. Hytch's letter I concur, and would observe, that teachers of phrenology constantly impress upon their pupils, that a phrenologist must observe nature. I am, Sir, yours most respectfully,

PHRENOLOGICUS.

Sept. 27th, 1836.

NORTH LONDON HOSPITAL.

SINGULAR CASE OF PARALYSIS.—ATONIC DELIRIUM—MONOMANIA—MORPHIA.

JAMES NIXEY, aged 32, was admitted on 30th May, under the care of Dr. ELLIOTSON. He is a haberdasher, and married; always enjoyed a good appetite, but has been temperate in respect to drink. None of his family have been subject to epilepsy or apoplexy. He has always enjoyed good health until about two years ago, when, after a considerable degree of exertion, as he was reaching very high, he was suddenly seized with numbness in his left hand, and loss of speech, which continued for about ten or fifteen minutes. He took an opening draught, which acted powerfully, and the next morning he was quite well, but was subjected to considerable anxiety at the time, on account of his marriage, which was to take place in the course of a day or two. About four weeks after marriage he was again seized with numbness in the left arm, but it exceeded in this attack as high up as the infe-

rior cervical vertebra. The left side of his face was also affected, all sensation in it being lost. The eye was much congested, pupil dilated, tongue much swollen, and the mouth drawn to the left side. All of these symptoms ceased in about fifteen or twenty minutes, after taking some sal volatile. Had no pain in his head, nor was his speech affected; the attacks occurred every four or five weeks, but became more severe, and of longer duration. During the attacks he appeared very drowsy, but never fell, or became insensible. After seven or eight attacks the numbness gradually proceeded down his left side to his leg, and his speech began to be affected, the only time since the first attack, and he now first felt pain in the head. Last new year's-day (Thursday) after feasting, the attack came on as usual, but in half an hour he became insensible, and remained so till Monday: he was bled and purged. Since then he has always hesitated in his speech, and faultered in walking, dragging his left leg. His memory also became impaired at times, and he was frequently making mistakes in giving change to customers. Before the severe attack in January, blisters had been applied to his spine, as disease was supposed to exist there. In February he went to one of the metropolitan hospitals; his head was shaved, and some ointment applied to it; he was also cupped in the back of the neck, and salivated. He remained in the hospital five or six weeks, during which period he had a very slight attack, merely numbness, commencing in the left foot, and extending to the knee: the attack went off almost immediately. He afterwards went into the country for a few weeks, where he had another attack, similar to the last. He now appears rather heavy and stupid; has difficulty in articulating; great pain all over the anterior half of the head, but principally on the left side; has occasional tinnitus aurium, chiefly on the right side. No intolerance of light, but noise distresses him. To have his head shaved; to lose a pound of blood by cupping, four ounces from each temple, and four ounces from behind each ear; five grains of blue pill twice a day. Three grains of hydriodate of potash, in solution, three times, and the ointment of iodine applied to the head, twice, daily; low diet.

21. Much relieved by the bleeding; hair on the head gone.

24. Gradually improving; speaks rather better; increase the dose of the potash to five grains and a half; on the 28th the dose was increased to six grains.

30. Had a recurrence of his fits yesterday, being seized with numbness in his left leg, which rendered him incapable of walking. His speech was a little affected; the attack came on in the afternoon, and lasted nearly half an hour; at seven P.M. he had a similar attack.

June 4. Has had two attacks since last report; he is now taking eight-grain doses of the hydriodate.

6. Had a more severe attack yesterday evening, about eight o'clock; was convulsed, and lost the power of speech for a short time; has only spoken a few words since; he was seized again this morning, between three and four o'clock, and has been nearly insensible ever since; his mouth and eyes are drawn to the left side; sensibility on the left side of the face is so much increased, that the slightest touch appears to give pain; the left side of the body is convulsed; the right arm is paralyzed in sense and motion; scalp very hot. Mr. TAYLOR ordered him to be cupped on the head to eight ounces. In the afternoon Dr. ELLIOTSON saw him, and ordered the cupping to be repeated; a blister to the nape of the neck; cold lotion to be constantly applied to the head; and a scruple of calomel to be given directly.

7. Power of moving the arm returned after the cupping; the calomel was repeated this morning, and his bowels are freely open; has been out of bed two or three times; pupils are contracted at one time and dilated at another, and do not contract on holding a candle near the eyes. The night-nurse observed that he has been more quiet since four A.M.; his complexion then became rather yellow. During the convulsions his head is drawn strongly to the left side; the chin almost in a line with the shoulder.

8. Has been very restless during the night, and it was necessary to confine him; he is now very quiet, more sensible, and capable of answering a question. Iris acts on exposure to light; his right arm is still deprived of sensation; mouth sore.

10. Has passed a more quiet night; his right arm is now completely paralyzed, and the leg partially so; the excited sensibility on the left side of the face appears less; intellect clearer; pulse 84, soft.

11. Better; omit his medicine for the present.

14. Has been improving since last report, but his mind is still impaired, seeming at a loss for words. Four grains of hydriodate of potash three times daily.

17. Much better; appears in much the same state as he was before the acute attack, but his speech rather more impaired than it then was.

24. Continued much the same until to-day; complains now of pain and tenderness of the abdomen; pulse 106, small, and rather hard; tongue very red, and fissured; slightly purged; a tumour near the anus was discovered, evidently containing fluid; it burst, and a quantity of thin sanious matter flowed out.

25. Much purged; has a good deal of fever; mucous and sibillant rattle on auscultation.

27. His mind is more affected, otherwise he is a little better; he is now taking six and a half grains of hydriodate for a dose, and two pints of milk daily.

28. Not so well; is much purged; has a great deal of tremor, and is constantly getting out of bed, but is easily replaced; he talks nonsense occasionally, and does not always understand when spoken to; pulse 100, weak; to have fifteen grains of kino powder three or four times daily.

29. Purging stopped; he has been extremely restless, and it is now necessary to confine him to bed; he has been wandering the whole night.

30. Is more quiet and sensible, and appears much better.

July 1. Has passed a good night; evidently improved; quite sensible; tremor gone.

5. Appears better; does not hesitate so much in speaking.

6. Appears rather worse again to-day; memory much affected.

7. Passed a restless night; raved, and was very violent; is better this morning, and has no recollection of his delirium.

12. Is very delirious.

19. Is still delirious; but the paralysis of the limbs is entirely gone; his speech is less affected.

23. Seems much stronger, but still delirious; omit his medicine; shave his head, and give him a quarter of a grain of the muriate of morphia twice a day.

26. Less delirious; increased the morphia to half a grain; on the 28th he was much the same; the dose increased to three quarters of a grain.

August 2. Has become quite rational; his dose was increased the day before yesterday to one grain.

4. Does not appear quite so well; voice rather affected again.

5. Is better again.

27. Since last report has been improving, and has had little the matter with him except suffering slightly from a fistula in ano. He was discharged on the 30th well.

In lecturing on this case, Dr. Elliotson remarked, that it was a very singular one; there must have been very great predisposition to the disease for so slight a circumstance to produce it, as in this case. Paralysis often came on suddenly, and disappeared, or lasted for life, but this instance showed very well how it might and did come on very suddenly. In this case the angle of the mouth was drawn to the left side, even when the muscles were at rest: this, he conceived, as in all cases in which this symptom occurred, without speaking, laughing, or bringing the muscles into action, was owing to an affection of the motor division of the fifth nerve, which gives branches to the buccinator and other muscles; because when the seventh nerve is paralysed, distortion only occurs when the muscles are put in action, and sensation was also impaired at one time in this case. The case was very curious, from the manner in which the paralysis varied. The atonic delirium which supervened, and exactly resembled what is termed delirium tremens, evidently arose from a predisposition, together with the purging, and exhibition of the mercury. After recovering from the other affections he became a perfect monomaniac; the slight hesitation he then had in his speech might be the effect of paralysis, or might arise from an over action of the lingual muscles when he was about to speak. He was relieved from this affection by morphia, which he (Dr. E.) had generally found successful in like cases.

Dr. E. had been often surprized to see young persons with various symptoms of paralysis, and even imbecility, recover, where he had believed there was organic disease of the head. He had thought in the present case that some organic change had taken place, from the slight cause which produced it, and the after progress of the case. Though the patient was now well, the disease might return.

MIDDLESEX HOSPITAL.

AMPUTATION AT THE HIP-JOINT.

Anna Allen, æt. 22, the subject of this case, unparalleled for the length and severity of the disease, and rendered doubly interesting on account of the fortitude, amounting to heroism, with which such protracted suffering was endured, presented herself at the *Middlesex Hospital* about four years ago, complaining of pain in her knee. The pain, which was now constant and acute, she stated, had commenced two years previously, when she was sixteen years of age, without any evident cause, and since had gradually increased to its present severity. She had already been seven months under the care of Mr. Keate at *St. George's Hospital*, who applied leeches, blisters, and the various revulsive remedies, but with no alleviation of the pain. She was admitted under the care of Mr. Mayo. The joint presented no tumefaction, redness, &c., indicating disease. It could be bent, but the pain was much increased by the effort. There was no remission of the latter symptom. Leeches, blisters, moxæ, and plasters of *Ext. belladonn.*, conjoined with perfect rest of the limb, which was bandaged in the extended position, never once produced the slightest change in the pain. It, on the contrary, rather increased it.

At the expiration of five or six months, she left the hospital, and returned home to Hampstead. There she remained for about a fortnight, and then applied at *St. Thomas's*

Hospital, where she was placed under the care of Mr. Travers. That gentleman, after a short trial of counter-irritants, and perhaps thinking, from their utter uselessness, that the disease, by involving the cartilaginous structures of the joint, had become incurable, proposed amputation above the knee, as the only means likely to afford relief. She did not consent, but rather hastily left the hospital.

In about three months she again appeared at the *Middlesex*. The pain was acute, much aggravated by a very slight movement of the articular surfaces; pressure upon the patella occasions absolute agony. Mr. Mayo employed frictions, with tartar-emetic ointment, and a repetition of blisters, but with no better results than before.

Seeking still to find some effectual remedy besides amputation, she went to *St. Bartholomew's Hospital*. There, however, she remained only a fortnight, and then returned to Mr. Mayo, who soon afterwards amputated the limb at the usual distance above the knee. The joint, upon examination, offered but little to account for such long continued suffering. The cartilages and articular ends of the bones did not display the slightest alteration. The synovial membrane alone presented marks of disease. This membrane was universally injected with blood. Patches of greater vascularity were here and there distributed, especially over the articular surfaces; a portion of it at the lower part of the patella was thickened to the extent of two or three lines. The stump healed kindly, but slowly, and she was able to leave the hospital in eleven weeks.

About a week after her return home, she accidentally received a blow upon the stump, which was not yet quite cicatrized. A day or two afterwards, the pain re-appeared. As its return so immediately followed the accident, she considered the blow to be the sole cause. She placed herself again under the care of Mr. Mayo. The stump healed in about a month, but the pain remained. At this time it did not seem to correspond with any particular part, nor was it at all localized. It was diffused over the whole surface of the integuments, as far as three inches above the stump. The slightest pressure, however, upon the cicatrix, particularly over the bone, produced an immediate considerable increase of the pain. An issue was made in the stump, which was permitted to remain for a month or six weeks. She then took carbonate of iron, &c., for two months more. Not the slightest amendment attended any part of this treatment. After a consultation of the surgeons belonging to the hospital, Mr. Mayo determined upon resection of the stump. The operation was performed five inches higher up. This time a second portion of bone, about an inch, and the same length of the great sciatic nerve, was removed, in order to leave a full stump, and avoid the chance of having the nerve included in the cicatrix.

The end of the sciatic nerve, and that of the saphenous branch of the anterior crural, were found, in examining the resected stump, to have been enlarged into white semicartilaginous bulbs, which were, no doubt, the cause of the morbid sensibility.

In two months, the pain re-appeared. She, however, left the hospital, but was soon (in 14 days) obliged to return. The pain was now quite as intense as before, but did not appear so general. An abscess formed in the stump, and discharged, without any mitigation of pain, which seemed to be principally confined to the course and termination of the sciatic nerve, as the greatest amount of sensibility resided at the outer and back part of the stump. Mr. Mayo consulted upon the case with Sir A. Cooper, who advised resection of the sciatic nerve. It was exposed at the back part of the thigh, and a portion, about an inch and a half long, removed. The relief which immediately succeeded the operation continued but a few days. Again the pain appeared, becoming more and more acute as the healing of the wound advanced. The same phenomena attended its reproduction after the stump was resected. Whilst the wound remained fresh and suppurating, the pain was either entirely absent, or it did not amount to acuteness; but, as in this instance, when it quite healed, the pain rose to the same insupportable intensity.

Every variety of medicine was tried in vain. Opiates alone afforded relief, which was transient, and only continued by frequent administration of the medicine. The stump diminished in size; the bone, without projecting conically, by the atrophy of the surrounding soft parts, came against the cicatrix. When this took place, the pain bore the same character as before, and was also referred by the patient principally to the bone.

Her sufferings from this period continued unabated,—they rather increased. In the spring of the present year, her health began to decline. All this time she continued under the care of Mr. Mayo, who, after much deliberation, at length determined upon amputation at the hip-joint. The patient had for some time contemplated that this operation would be recommended. It had been mentioned in her presence, and afterwards suggested to her as a probable, but not as a certain, means of relief. Worn out by long suffering, she consented, even desired, to submit to the operation.

Operation.—The patient was reclined upon the operating table, close to the edge which corresponded with the affected side, the head and shoulders slightly raised, and supported by assistants. A ligature was first placed upon the femoral artery, an inch below Pou-

part's ligament. Upon examination, it was found to embrace one of two vessels which resulted from a high division of the artery. The ligature was therefore removed, and placed above the point of bifurcation, immediately beneath the ligament. The operator then introduced a narrow, double-edged, amputating-knife, about twelve inches in length, at the inside of the femoral vessels, an inch and a half below Poupart's ligament, and brought it out at the tuberosity of the ischium. He then carried it obliquely downwards and inwards, to form the inner flap, which was about eight inches in breadth, and four in length, the limb being large and fleshy. The limb was then forcibly abducted as far as possible. The surgeon, with a short, strong, convex scalpel, cut through the capsular ligament at the inner surface of the joint, which he traversed till he arrived at the trochanter major. He now disengaged the top of this process from its muscular attachments, and, resuming the amputating-knife, introduced it at the superior angle of the wound, and made it appear at the inferior one; glided over the trochanter major, which he was enabled to do from the previous division of its attachments, and then, carrying the knife downwards and outwards, formed the second or external flap. Not more than half a minute elapsed from the commencement of the first flap to the termination of the last one. Ten or twelve arteries, including the gluteal and sciatic, were tied, and an inch of the sciatic nerve was drawn out and resected. The patient lost less than 12 ounces of blood.

The operation was followed by extreme prostration; no urine was secreted for the first twelve hours; the pulse continued low, but rapid. She rallied, however, under the administration of stimulants, by the next day, and from that time no other unfavourable symptom occurred.

It is now five months since the operation; the wound is merely superficial; not the slightest indication of the old pain has yet appeared.

When the operation was concluded, Mr. Mayo examined the stump in the presence of his pupils. The sciatic nerve was enlarged at its cut extremity, but not cartilaginous, as after the former resection. He then explained his reasons for expecting the favourable result which has fortunately ensued. The case was one in which the nerves of the limb displayed a disposition to neuralgia. The affection might depend upon different causes. It sometimes proceeded from disease of the spinal cord. A case of neuralgia after amputation occurred in *St. Bartholomew's Hospital*; the patient died after some years of suffering; there numerous cartilaginous and osseous deposits were found upon the posterior surface of the spinal marrow. Neuralgia resulting from such a cause would, of course, be incurable. But it might be confined solely to the nerves of a limb; as an instance, the following case might be mentioned:—

A female presented herself at *St. Thomas's Hospital*, with painful contractions of the fingers. Amputation on the fore arm was performed by Mr. Tyrrell. After the wound had cicatrised, neuralgia of the stump appeared, for which Mr. Langstaffe resected the stump at the elbow; the neuralgia, however, returned as before. At last, Mr. Bransby Cooper took off the remainder of the limb at the shoulder-joint; the consequence was, that the affection never again returned. The patient, singularly enough, afterwards became an inmate of the *Middlesex* for disease of the chest, where she had been seen by the pupils of the hospital. It was certainly difficult to explain why the detachment of a limb at the joint should so effectually arrest the malady; the divided ends of the nerves were still left in the stump. When the head of the bone remained, the muscles which were attached to it constantly tended, by their contractions, to excite the wounded nerves, which, it might be supposed, became still more sensible to external impression by the formation of their bulbous terminations. Would not such causes be amply sufficient where there was, as there were, an idiosyncracy to neuralgia? In Allen's case, the stump was often spasmodically thrown forwards and upwards, which was always accompanied with a temporary increase of the pain. When the bone was entirely taken away, none of those movements could take place; the muscles were atrophied, and the nerves, no longer exposed to any cause of excitement, would probably atrophise also.

THE LANCET.

In consequence of the extraordinary demand for the Students' Number of the Lancet (forming No. 1. of the two volumes for 1836-37) an extra quantity has been printed, and that number of the journal is still kept on sale at the Office.

The demand for No. 2 having unexpectedly exceeded the sale of the numbers of the last volume to a very considerable extent, those country readers who have been disappointed by not receiving the usual supply, may now be furnished with it through the booksellers, an additional impression having been taken for that purpose.

As the sale of The Lancet appears to be rapidly increasing, and, as a demand for the numbers of the current volumes already amounts to some hundreds more than for the numbers of the year which has just ended, arrangements have been made for supplying all the numbers of the new volume complete up to the end of November, by which time the extent of the new demand will be fully ascertained.